ASEAN ECONOMIC COOPERATION WITH PARTICULAR EMPHASIS ON THE FOOD AND AGRICULTURAL SECTOR

By

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To my parents

and family

JESSIE, JAIME and ELINE

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By

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Members of the Association of Southeast Asian Nations (ASEAN) are, in varying degrees, outward-looking middle-income countries whose economies have been among the world's most dynamic over the past two decades. Since its formation in 1967, ASEAN has achieved a global status as a successful regional grouping, but only politically. The success is derived not so much from regional economic cooperation but from a concerted and joint approach to common problems in foreign relations.

Despite being visible, dynamic, and successful, a review of the ASEAN experience reveals problems confronted by other less successful regional groups. Issues such as the different perceptions and expectations of economic cooperation, distribution of benefits and costs and the fear of disruptive effects, particularly among the less developed members, have surfaced.

This study explored the effects of extending and expanding economic cooperation among the ASEAN countries. The overall objective was to examine the comparative static effects of intra-ASEAN trade liberalization and the potential of intraregional trade. A 25 sector semi-input output model of the type suggested by Mennes was used. The model minimizes investment outlays given fixed national income growth targets over a range of tariff reductions which included free trade.

Results of the model provided insight into the potential and direction of intraregional trade. As regional tariffs are reduced, some of the imports are sourced from member countries rather than extraregional countries. Imports in some of the sectors are partially or entirely substituted by member countries. However, ASEAN continues to rely on extra-ASEAN imports in chemicals, transport equipment, machinery and metal products. The need for these extra-ASEAN imports reflects ASEAN's limited expansion capacity in these sectors. Most of the regional trade is dominated by crude petroleum.

The total elimination of regional tariff barriers resulted in a reduction of only 0.8 percent in the total investment cost relative to a nonintegration situation. This result generally conforms to past empirical evidence and can be attributed to the lack of complementarity in the structure of ASEAN economies. In terms of the potential of regional trade, intra-ASEAN trade as a proportion of total trade expanded from 12.5 percent to 21.6 percent.

CHAPTER I
INTRODUCTION

Since 1960, numerous developing country groupings, especially in Latin America and Africa, have been established with the aim of achieving closer economic cooperation and integration.[1] Different degrees of cooperation characterized these regional schemes which were modelled after the apparently successful experiences of the European Economic Community (EEC) and the European Free Trade Area (EFTA) (Nugent, 1986).

Founded in 1957 under the Treaty of Rome, the European Community (EC) comprises some of the major developed countries of Western Europe and is the most significant and influential of the integration arrangements.[2] The founding members were Belgium, France, Italy, Luxembourg, the Netherlands and West Germany. Denmark, Ireland and the United Kingdom joined in 1973, followed by Greece (1981), Portugal and Spain in 1986. Turkey and Norway have also submitted applications for membership. The whole concept of the EC is built on four freedoms--the freedom to move goods, the freedom of workers to move, the freedom to exercise a trade or profession, and the freedom to move payments and capital. Although the basis for the formation of a common market was in terms of factor mobility, the founders of the EC considered it as a phase in the process to culminate in a complete economic and political union. Present efforts to harmonize monetary, fiscal, and social policies, and steps to achieve a monetary union are seen as positive steps towards the attainment of such a goal.

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[1] Unless otherwise defined, the terms "cooperation" and "integration" will be used interchangeably.

[2] On 8 April 1965 the member states of the three European Communities signed the "Merger Treaty" for the amalgamation of the three European Communities--the High Authority of the European Coal and Steel Community (ECSC), the Commission of the European Economic Community (EEC) and the Commission of the European Atomic Energy Community (Euratom)--into a single European Community (EC).

In the mid-1950s, when a European Community comprising the whole of Western Europe was being pursued, a number of countries outside the "original Six" were unprepared to accept the constraints on their economies and loss of political sovereignty. To the United Kingdom, the adoption of a common agricultural policy was seen as a direct conflict to their interest in the Commonwealth--particularly with regard to historical Commonwealth preferences. The United Kingdom favored the adoption of a free trade in industrial products only. In the case of Sweden, they did not believe that the agreements were compatible with their policy of neutrality (Wilk, 1987).

When a common Western European solution was not forthcoming, most of these countries formed an alternative free trade area amongst themselves. EFTA was established in 1960 under the

Stockholm Convention with the objective of creating a free market for industrial products only. The membership consisted of Denmark, Norway, Portugal, Switzerland, the United Kingdom, Sweden and Austria. Finland became an associate member in 1961 and Iceland joined in 1970. With the departure of Denmark and the United Kingdom together with Ireland in 1973 (Portugal did likewise in 1986), the EFTA was left with a membership consisting mainly of the relatively smaller nations of Western Europe. However in 1970, the EC and EFTA signed a series of bilateral agreements which in effect resulted in virtual free trade in industrial products in a market comprising their joint membership.

Economic Cooperation among Developing Countries (ECDC)

More than a dozen integrated areas have been established among the developing countries since 1960. These groupings and their membership are shown in Table 1.1 together with a brief summary of their degree of cooperation and some of the problems encountered.[3]

The first integration agreements were formalized in Latin America. Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua signed the Managua Treaty in 1960 which established the Central American Common Market (CACM). In the same year, the

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[3] For a more comprehensive account of these experiences, see Wionczek (1966a), Hazlewood (1967, 1975), Robson (1968, 1984), Nugent (1974), Ffrench-Davis (1980) and Garnaut (1980), and El-Agraa (1982).

Table 1.1 ECONOMIC GROUPINGS AMONG DEVELOPING COUNTRIES

Grouping and Year of Establishment		Members	Degree of Cooperation<e>	Problems and Conflicts
Africa				
UDEAC (1964)	Union Duoaniere et Economique de l'Afrique Centrale	Cameroon, Central African Republic, Chad, Equatorial Guinea, Gabon	3	Because of remaining trade barriers within the area, it is a Prefarential Trading Arrangement rather that a Customs Union or Common Market. No large common industriel projects
MRU (1973)	Mano River Union	Liberia, Siarra Leone, Guinaa (1980)	2	Overlapped by tha policy of ECOWAS
CEAO (1973)	Communauta Economique de l'Afriqua Centrale preceded by the West African Customs Union, established in 1959	Benin, Burkina Faso, Ivory Coast, Mali, Mauritania, Niger, Sanegal	2	The area has raached the level of e monetary intagration with a relatively wall operating compensation system
ECOWAS (1975)	Economic Community of West African Stetes	All members of tha MRU,the CEAO and Cape Verde, Gambia, Ghana, Guinea-Bissau, Nigeria and Togo	3	The declered and intended steps towards a customs union and a and a monetary integration have been realized only to a limited extent
CEPGL (1976)	Communeute Economique de Pays das Grands Lacs	Burundi, Rwanda, Zaire		
EAC (1967)	East African Community	Kenya, Uganda, United Republic of Tanzanie	2	Broke up in 1977
SADCC (1980)	South African Coordination and Development Conference	Angola, Botswana, Lesotho, Malewi, Mozambique, Swazilend, Tanzania, Zambia and Zaire	1	
Latin America				
CACM (1960)	Central American Common Market	Costa Rica, El Salvador, Guetemala,Hondura, Nicaragua	1	Relatively successful by eliminating trade berriers within the area until political conflict beset the region
ANDEAN (1969)	Andean Group	Bolivia, Colombia, Ecuador, Peru, Venezuala, Chile (until 1973)	2	A joint industrialization has taken place in three sectors
CARICOM (1967)	Caribbean Common Market	Barbados, Belize, Guyana, Jamaica, Trinidad and Tobago, Grenade, St. Lucia, St. Vincent, Dominica, Montsarrat, St. Kitts-Nevis-Anguilla and Antigua		

Table 1.1--continued

Grouping and Year of Establishment		Members	Degree of Cooperation	Problems and Conflicts
ALADI (1980)	Associacion Latino Americana de Integracion prededed by the Latin American Free Trade area established in 1960	Andean Group plus CACM plus CARICOM plus Argentina, Brazil, Chile, Mexico, Paraguay and Uruguay	1	After a successful beginning, large divergences between the more and less industrialized members led to the formation of ANCOM in 1969. eventually led to the formation a weaker integrative framework in 1980
Asia				
RCD (1964)	Regional Co-operation for Development	Iran, Pakistan and Turkey	2	
ASEAN (1967)	Association of South East Asian Nations	Indonesia, Malaysia, Philippines, Singapore, Thailand and Brunei (1984)	2	The speed of the integration process is slow by intention, A stepwise procedure for trade liberalization has been been carried out. Industrial cooperation, however, achieved limited success. Deeper forms of cooperation in trade, investment, industries and other are being planned
SAADCC (1985)	South Asian Area Regional Cooperation	Bangladesh, Bhutan, India, Maldives, Nepal,Pakistan and Sri Lanka	1	Agreement to implement an Integrated Program of Action but excludes trade and industry.

<a> Degree of cooperation according to the following:

1. Application of the traditional technique of trade liberalization without commitments regarding the coordination of policies in other fields. Special measures might be a reduction of tariffs in favor of other developing countries only (not necessarily to all developing countries, but not to developed countries) within a most favored nation agreement.

2. This category involves a higher degree of economic cooperation. It may include an agreement in the coordination of investment and/or production policies in certain sectors where industries could be established economically only on a regional or multinational basis. This method, which goes beyond the mere exchange of information on investment projects, could stimulate the establishment of new industries, the expansion of existing industries and the degree of specialization among existing plants. Such agreements could relate to a single or a number of specific industrial sectors, and to one or a group of developing countries and lead to a vertical or horizontal pattern of specialization.

3. This category could involve a more ambitious form of establishing an integrated area. Although the difficulties to overcome are larger than those for the other two, developing countries have been attracted to this category because greater advantages have been expected from it.

Sources: Robson,P. (1984): The Economics of International Integration, Second Edition, London, Allen and Unwin.
UNCTAD: Handbook of International Trade and Development Statistics, New York, various years.

Latin American Free Trade Association (LAFTA) was formed with the signing of the Montevideo Treaty by Mexico and all the countries of South America except for Guyana and Surinam. The Treaty provided for the gradual removal of restrictions on trade flows between member countries over a period not to exceed twelve years. Trade liberalization, however, came to a halt in the mid-60s. In 1967, there was disagreement among members to approve a list of products for a second 25 percent tariff cut. The Caracas protocol signed in December 1969 postponed the establishment of a free-trade area from 1971 to 1980. LAFTA was subsequently replaced by the Latin American Integration Association (LAIA) or the Asociacion Latina Americana de Integracion (ALADI), a weaker alliance, whose short term objective is the establishment of an economic preference area. The long term aim is the establishment of a common market. But in May 1983, Brazil announced its withdrawal and its intention to rely on bilateral trade agreements in the future.

Unhappiness within LAFTA by the lesser developed members led to the signing of the Cartegena Treaty in May 1969. The group comprised the five Andean countries of Bolivia, Chile, Ecuador, Colombia and Peru. Venezuela joined in 1973 but Chile withdrew in 1976. A common external tariff was to be introduced and barriers to internal trade were to be eliminated by the end of 1990. The liberalization of trade and the introduction of a common external tariff for numerous industrial products were tied to agreements allocating industries by country. By the end of 1981, such agreements have been concluded only for three industries--metalworking, automobile and petrochemical industries. Tariffs on mutual trade in other products have been eliminated according to schedule.

The first attempts towards economic integration in the Caribbean resulted in the signing of the General Treaty of Antigua which in December 1967 established the Caribbean Free Trade Association (CARIFTA) between Antigua, Barbados and Guyana. Trinidad and Tobago joined the following year, so did Grenada, St. Lucia, St. Vincent, Dominican Republic, Montserrat, St. Kitts-Nevis-Anguilla and Jamaica. Belize joined in 1971. Trade in some products was to be liberalized under the Treaty. Import duties and quantitative restriction on other products were to be eliminated over a five-year period by the more developed members (Jamaica, Trinidad and Tobago, Barbados and Guyana) and over a ten-year period by the others. Agricultural products were not included. The Treaty of Chaguaramas in 1973 transformed CARIFTA into the Caribbean Common Market (CARICOM). It came into force on 1 August 1973 for Barbados, Guyana, Jamaica and Trinidad and Tobago and on 1 May 1974 for the six less-developed members (Grenada, Dominica, St. Vincent and St. Lucia, Belize and Montserrat). Antigua, St. Kitts-Nevis and Anguilla joined in July 1974.

Several integration schemes have been established in Africa. The Union Douaniere et Economique de l'Afrique Centrale (UDEAC) comprised the Cameroon, Central African Republic, Congo, Equatorial Guinea and Gabon. UDEAC member countries plus Chad, a former member, constitute a monetary union. The Communaute Economique de l'Afrique de l'Ouest (CEAO) consisting of the Ivory Coast, Mali, Mauritania, Niger, Senegal and Upper Volta was formed under the Treaty of Abijan in 1973. Except for Mauritania, member countries of CEAO together with Benin and Togo are participants in a monetary union. In 1973, the Mano River Union (MRU) was established between Liberia and Sierra Leone. Guinea joined in 1980. The MRU is a customs union and includes some industrial sector cooperation. The Economic Community of West African States (ECOWAS) which consisted of all members of the MRU, CEAO and UDEAC and some other West African states was created in 1975. The Economic Community of the Countries of the Great Lakes (CEPGL) was formed in 1976 by Burundi, Rwanda and Zaire. The East African Community (EAC), until its breakup in 1977, consisted of Kenya, Uganda and Tanzania. The Lusaka Declaration in 1980 founded the Southern African Coordination and Development Conference Countries (SADCC) comprising Angola, Botswana, Lesotho, Malawi, Mozambique, Swaziland, Tanzania, Zambia and Zimbabwe. Among its objectives, the SADCC countries seek to reduce economic independence from the Republic of South Africa.

In Asia, the Regional Cooperation for Development (RCD) consisting of Iran, Pakistan and Turkey is a very limited sectoral integration arrangement. The Association of Southeast Asian Nations (ASEAN), the base for this study, consists of five founding members--Indonesia, Malaysia, the Philippines, Singapore and Thailand. Brunei joined in 1984 when it attained independence from Britain. The pace of economic cooperation has been slow by intention. Trade liberalization has been implemented in stages and industrial cooperation has thus far been less successful. The South Asian Association for Regional Cooperation (SAARC) was formalized in 1985 at Dhaka among the countries of Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. There was mutual agreement (Integrated Program of Action) for cooperation in nine areas, but trade and industry were not among the sectors.

Motives for Economic Integration

In the beginning, integration theory in economic literature is often synonymous with the theory of customs union (Nienhaus, 1987). The expected gains from integration, derived from the theory of customs union which evolved from the fifties, are based on the static effects of comparative resource allocation. By reducing tariffs and/or relaxing quantitative restrictions, the theory centers on the trade creation and diversion effects. Trade creation is defined as the shift from the consumption of higher-cost domestic products to lower-cost products of member states and trade diversion as consumption shifts from the lower-cost non-member countries' products to higher-cost products of member states. These effects were determined to be more beneficial when the economies of members were more competitive and less complementary, the larger was the integrated area, the more prohibitive the transport costs between members and non-members, the higher the original tariff walls, and the lower the common external tariff (Meade, 1956).

During the sixties with the proliferation of economic cooperation among developing countries, it became increasingly evident that the orthodox theory of integration was not applicable to developing countries. The orthodox theory of customs union viewed the consumption of private goods as the sole determinant of national welfare, and hence the advantages or disadvantages of economic integration. The integration theory which evolved when applied to developing countries (or the unorthodox theory) widened the welfare function to include a public good--economic development and industrialization (Cooper and Massell, 1965).

Economic cooperation with other countries is seen as an alternative to overcome a narrow domestic market. Individual member states then will be able to take advantage of an enlarged regional market with increased industrial capacity. Integration would also enable import substitution policies to be continued and extended at the regional level at a much reduced cost. Industrialization behind a common tariff wall in conjunction with trade liberalization would enable member countries to take advantage of economies of scale and external effects. These dynamic effects were neglected in the original customs union theory. Besides the economies of scale and external effects, the integration of national markets would also intensify competition resulting in a higher overall level of productivity. The coordination of investment and production widens the scope of efficient investments via relocation of investment funds within the integrated area. Inflows of investment capital and new technology from outside the region will enhance industrial expansion in those industries where economies of scale and comparative advantage are likely to exist. A regional approach in planning would also have advantages for infrastructural development such as the transport and communications systems. Further, a coordinated approach by regional partners should increase bargaining power vis-a-vis major trading partners and improve terms of trade and market access. These expected gains encouraged the establishment of several integration arrangements among developing countries.

Problems of Integration

In contrast to the expected gains of economic integration, the experiences of integration among developing countries have been a history of conflicts and failure. Although the elimination of trade restrictions have at the beginning increased the volume of intratrade, the initial positive response subsequently has waned. The only possible exception is ASEAN. Many of the economic programs for regional cooperation, which once appeared so promising, have failed due to lack of cooperation or conflict or have been shelved altogether. A number of factors have been attributed for this state.

The theory of customs union was developed in the fifties with regard to the industrialized countries of Europe. The belief that this theory could be applied unaltered to the developing countries was wrong and this led to false expectations regarding the gains to be derived. Most of the developing countries have a low industrial base. They are producers of agricultural products and raw materials and export mainly to the developed market economies. Industrial production is based on the manufacture of these primary products. Compared to Europe, the potential for relocation of the productive factors is limited. Furthermore, most of industrial production has been directed toward the manufacture of final consumer products (import substitutes), and developing countries are unprepared and unwilling to open their highly protected domestic markets.

Another important reason for the failure of economic cooperation among developing countries has been the distributive issue. A disproportionate share of the economic gains accrues to the most developed and efficient countries. The polarization effect as a result of the more developed members being able to attract new industries and investment from within and without tends to widen the gap in economic development among the members. Since compensatory mechanisms are conceptually difficult to negotiate and implement, the less developed members are less eager to hasten the pace of economic integration if they are already members, and it is likely that they will introduce measures to protect their domestic economies.

Since a faster pace of trade liberalization may not be in the interest of the less efficient producers, regional interests are only accorded priority if they coincide with national interests. Countries with higher production cost structures are naturally apprehensive of the effects of trade liberalization and its impact on domestic output and employment. Furthermore, higher tariff members are reluctant to cut tariffs because of perceived inadequate reciprocity from the lower tariff members. Since the costs relative to benefits are apparent and politically important, members expectedly take a short term view of the perceived gains and losses. To resign short term national interests in favor of long term common regional goals requires a high level of political statesmanship. It is not surprising that the lack of political will has often been blamed as one of the reasons for the failure of economic integration schemes among developing countries.

Another reason for the unsuccessful attempts at economic cooperation has been the failure to realize the enormous costs of negotiating, renegotiating, monitoring and enforcing agreements among the governments of member countries and the length of time for expected gains to be realized. Even among the industrialized countries of the European Community, the time absorbing and lengthy negotiations clearly show how difficult it is when the benefits as well as the costs are not perceived to be equally shared.

Other reasons which contributed to the poor record of economic cooperation among developing countries have been the frequent and repeated fundamental socio-economic and political changes within the integrated area. The instability of governments only compounded a difficult situation. If the differences between the economic systems as a result of these political changes are too vast to be bridged, the tensions among the members may lead to the demise of agreements.

Objectives of Study

The Association of Southeast Asian Nations (ASEAN) was originally comprised of Indonesia, Malaysia, the Philippines, Singapore and Thailand and was established by the signing of the Bangkok Declaration in 1967. As mentioned earlier Brunei joined in 1984. It is one of the most successful regional groupings among developing countries and has achieved wide international recognition as a viable, cohesive block. Since its formation, ASEAN has achieved a global status second only perhaps to the European Community, but only politically. The annual foreign ministers meetings are often attended by countries such as the United States, Japan and the European Community and others dubbed modestly as ASEAN's dialogue partners. The success of ASEAN has derived not so much from regional economic cooperation but from a concerted and joint approach to foreign relations in matters of common interest.

Whatever the circumstances or motivations underlying the formation of ASEAN, ultimately its success will be judged not by political achievements but by tangible benefits from economic cooperation. A review of ASEAN experience reveals that some of these same problems plague ASEAN as those experienced by other developing country groupings--such as the perceptions and expectations of economic cooperation, distribution of benefits and costs and the fear of disruption in the domestic economies. This study attempts to examine the prospects of extending and expanding economic cooperation among the member countries of ASEAN with particular emphasis on the agriculture and the food sectors.

The general objective of this study was to examine the comparative static effects of intra-ASEAN trade liberalization.

The specific objectives were to

1. estimate the magnitude of benefits in terms of lower investment cost to achieve growth targets as a consequence of intra-ASEAN tariff reductions,
2. examine the related effects of intra-ASEAN trade liberalization in terms of production, investment, direction and composition of intraregional trade and balance of trade,
3. assess the potential of intra-ASEAN trade,
4. determine the sectoral comparative advantage among the ASEAN economies,

5. review and compare the ASEAN economies in terms of economic growth, production, industrial development and policies,
6. examine intra- and extra-ASEAN trade in terms of its magnitude, direction and composition,
7. determine the effects of regional cooperation on the agriculture sector and the possible benefits and cost derived therefrom, and
8. propose a pragmatic approach and mechanism for further regional cooperation in the food and agriculture sectors in view of its importance and likely negative effects on production and employment.

Significance of the Study

Since ASEAN is visible, dynamic and successful--at least politically--a detail examination of it could perhaps provide insights into the determinants of a successful integration scheme. ASEAN could be a model of economic cooperation for other developing countries to emulate. This study provides a greater understanding of the potential and real economic gains, the short-run limitations of intraregional trade expansion and ways ASEAN attempts to overcome divisive issues such as the distributive and polarization effects. One of the primary reasons for the failures of economic cooperation among developing countries has been a degree of blind and misguided faith in the applicability of the EC model. Attempts to apply the EC model to developing countries have either resulted in eventual disintegration and abandonment or recognition of the non-applicability of its provisions. ASEAN economic cooperation is still a long way from success but it looks good when viewed against the dismal performance of other schemes. The mere fact that it is alive and well after two decades is evidence of a degree of success. Also, the number of activities in the name of ASEAN has been expanding rapidly.

Organization of the Study

The orthodox theory of international economic integration and its effects are reviewed in the next chapter. Chapter III examines the traditional theory from the perspective of economic cooperation among developing countries. Chapter IV provides a comparative assessment of the ASEAN economies in terms of their macroeconomic performance, industrialization experience, strategies and structural adjustments. The performance, pattern and composition of extra- and intra-ASEAN are examined in Chapter V.[4] Chapter VI provides a historical perspective of ASEAN economic cooperation since its formation, the mechanism of cooperation, organization, decision making and external relations. The inclusion of agriculture in ASEAN economic cooperation is explored in Chapter VII. Because of its importance in the economies of ASEAN countries, the benefits as well as the obstacles and the realities for its inclusion are examined. A pragmatic approach to incorporate agriculture is proposed. Chapter VIII formulates a planning model for ASEAN economic cooperation and the numerical specifications of the model are detailed. The results are discussed in Chapter IX. Chapter X provides a summary of the study.

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[4] Readers who are familiar with the ASEAN economies may skip Chapters IV and V.

CHAPTER II
THEORY OF INTERNATIONAL ECONOMIC INTEGRATION

Economic integration is a term used to describe a state of regional or international economic cooperation. Various stages of economic cooperation can be identified. Balassa (1976:27) classified these as follows:

a. Preferential trade arrangements
b. Free Trade Area
c. Customs Union
d. Common Market
e. Economic Union
f. Supranational union

A preferential trading arrangement is the most fundamental of all the forms of economic cooperation. It entails the reduction of tariffs and quantitative restrictions in intraregional trade. A reduction of all intraregional tariffs to zero creates a free trade area. In addition, a free trade area retains its own tariff against nonmember nations. A customs union adds a common external tariff against nonmember nations to the provisions of a free trade area. In addition to all the provisions of the customs union, all restrictions on factor movements within the area are abolished in a common market. In an economic union, in addition to all provisions in a common market, economic and social policies are harmonized. Lastly, a supranational union which is the most advanced form of integration, not only includes all the provisions above, but all participating countries relinquish their sovereignty over economic and social policies to a supranational authority.

Effects of Economic Integration

Gains from economic integration can be classified as static (one-shot) or dynamic (on-going).[1] The original or initial benefits are essentially static effects but if the economic integration effort is a success, the one-shot gains will generate dynamic gains. The most important static effect is derived from allocative efficiency gains in production and consumption due to a more efficient relocation of resources following the removal of internal barriers. The other static effects are terms of trade, improved efficiencies due to increased competition in factor and product markets. Economies of scale effects are static as well as dynamic, some resulting from the original enlargement of the market, others deriving from dynamic gains. The sources of dynamic gains are higher rates of capital formation, faster technological gains and an influx of foreign investment.

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[1] Static effects refer to welfare gains or losses from the relocation of production and consumption patterns. If the existing equilibrium is altered for any reason, such as the removal of a tariff, forces will come to play that will bring about a new equilibrium position. Dynamic effects refer to the various ways which economic integration affects the rate of growth of GNP of participating countries. For LDCs, emphasis has been placed upon dynamic rather than static effects in evaluating the desirability of economic integration. For further details, see Gray (1979:238)

Effects on Income and Consumption

The initial theory of economic integration was based upon the theory of customs unions and second-best theory.[2] The first major explicit formulation of a systematic theoretical foundation for a customs union theory originated with Viner's pioneering work, The Customs Union Issue in 1950. Viner's static analysis of the welfare effects of customs union was in terms of trade creation and trade diversion. The former refers to a shift from high-cost domestic production to lower-cost production in a partner country. The latter refers to a shift from the lowest-cost (nonmember) external producer to a high-cost regional producer.

Prior to Viner's contribution, it was always assumed that a customs union, or more generally, any reduction in tariffs, would necessarily lead to a significant improvement in world welfare, because this would lead to a free trade area in the absence of any restriction which, following the classical theory of international trade, would result in higher welfare for all concerned. However, as pointed out by Viner, a customs union, because it combines elements of freer trade with elements of increased protection, can have both beneficial as well as detrimental effects, thus the concept of trade creation and trade diversion. Since Viner's analysis was confined only to production effects, he noted that trade creation has always had favorable effects and trade diversion adverse effects on economic welfare. Thus, any proposal for the establishment of a customs union should be examined in terms of the magnitude of trade creation and diversion that will occur. A customs union will increase combined economic welfare only to the extent that the effects of trade creation outweigh those of trade diversion.

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[2] In general, a customs union is inferior to free trade but superior to the non-discriminatory tariff arrangement (Yotopoulos and Nugent, 1977:ch. 19). The general theory of second best states that if one of the Pareto optimum conditions cannot be fulfilled, a second best optimum situation is achieved only by departing from all other optimum conditions (Lipsey and Lancaster, 1956).

The analysis of the welfare effects of a customs union in terms of trade creation and diversion was incomplete, and subsequent theoretical developments, in particular by Meade (1956), Lipsey (1957) and Gehrels (1956) modified and extended Viner's analysis. Meade modified Viner's assumption of fixed demand and constant cost schedules by using downward-sloping demand schedules and upward-sloping supply schedules. Lipsey and Gehrels independently criticized Viner's work in the context of the traditional theory of economic integration for not including the consumption effects of price reductions due to the removal of duties on imports from member countries in a customs union. Both argued that Viner implicitly assumes that goods are consumed in some fixed proportions which is invariant with respect to relative prices. If relative price changes alter consumption patterns, favorable consumption effects may conceivably outweigh any adverse production effects of trade diversion from lower cost to higher-cost sources of supply. Thus, to quote Lipsey (1957:41) "the simple conclusions that trade creation is 'good' and trade diversion is 'bad' are no longer valid." There is, thus, no a priori way to determine if the existence of trade diversion will decrease welfare. It might be increased, decreased or unchanged.

Effects of Consumption and Income Distribution

If there is trade diversion in production i.e., if prices in the integration area are higher than rest-of-the-world prices plus tariff levels, as a consequence of an integration scheme, some prices will increase. Such a price rise will, in most cases, result in a reduction of real consumption and/or savings. Another likely integration effect is an increase in consumption due to an increase in production and income, the amount depending on price and income elasticities.

The effect of integration on income distribution has been analyzed with respect to distribution within the individual partner countries and between countries. Due to polarization effects or concentration of productive activities due in part to comparative advantages, different degrees of economic development and inequitable distribution of income will result. There are a variety of compensation schemes to redress this distribution problem (Robson, 1971). We will examine more fully the problems of redistribution of the benefits accruing from integration in a later chapter.

Effects on Terms of Trade

Discriminatory or preferential tariff reductions will clearly affect the relative prices and the terms of trade of the integration partners vis-a-vis the rest of the world (third world). As seen earlier, the consumption effects are partly determined by these price changes. In an analysis on the economic integration effects on the terms of trade, Mundell (1964) came to the following conclusions.

1. A discriminatory tariff reduction by a member country improves the terms of trade of the partner country with respect to both the tariff-reducing country and the rest of the world.
2. Through a discriminatory tariff reduction by a member country, the terms of trade of the tariff-reducing country may rise or fall with respect to third countries.

Economies of Scale

The question of whether integration will increase efficiency and productivity depends largely upon the existence of unrealized economies of scale. With integration, larger markets are created which can open up investment for larger plants with a size sufficient to attain some level of sufficiency. This "minimum size" plant varies with the type of industry (Westphal, 1971). Generally,the minimum size plant in developing countries is too small to support basic and heavy industries.[3] However, with integration and larger markets, the participating countries may attain the technological optimum size for a variety of industries. It should be noted that even with scale economies, production costs may still be higher than third countries. If trade diversion occurs in such industries, then some or all of the member countries may suffer a decline in welfare. Hence, economic integration may have very undesirable side-effects which may outweigh any gains accruing from the creation of an enlarged market per se.

Pertaining to the small domestic markets in most developing countries, firms have the alternative of expanding the market through foreign trade. This proposition, however, inevitably encounters greater risks and uncertainties for the firms in their export drive compared to a protected market within the integrated area. Such risks and uncertainties associated with foreign trade provide an argument for economic integration. Allen (1961), in justifying the protection of local industry despite the economic costs of such a policy, remarked that even if it is presumed that scale economies are possible and benefits therefrom are significant, it is still probable in many cases that the new industries are high cost relative to imports, thus requiring continued or even more widespread protection. Such protection may be justifiable on infant-industry grounds, but it should be recognized that a short-term economic cost is involved.

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[3] For some comparative costs of production of the ASEAN package deal industries, see Ariff (1980).

In such a situation, the narrow market may not attract private foreign investment. Joint government investment decisions can technically achieve such economies of scale by assigning a variety of plants among the member countries.[4] This arrangement, however, could result in a state-owned and operated system of cartels. The establishment of such cartels will have at least two effects. One, market forces cannot be relied upon to dictate output and expansion decisions resulting in some efficiency loss. Two, and probably more important, the cartels will necessarily inhibit competition, one of principal benefits to be expected of integration (Allen, 1961:315:35).

Specialization

The effects of specialization are well known from the theory of international trade. The Heckscher-Ohlin Theory of Comparative Advantage, which attempts to explain trade patterns, is based on the differences in factor endowments between countries. The theory states that, given certain assumptions, each country will specialize in the production of those goods for which it is best suited or for which its inferiority is least (Kahnert et al. 1969:26 and Bhagwati, 1965).

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[4] See Ffrench-Davis (1980) pertaining especially to regional investment planning among the Andean Market countries. Quantitative estimates of the possible contribution of economies of scale growth can be found in Denison (1967). Empirical evidence of the importance of economies of scale to a number of industries is given by Haldi and Whitcomb (1967) and Pratten (1971). These aspects will be further discussed in a later chapter on ASEAN economic cooperation.

There are at least three ways in which specialization can occur. Participating countries can pursue a kind of broad specialization by sectors such as manufacturing and agriculture, interindustry specialization according to comparative advantage, or through intraindustry specialization. The third option is actually a special case of economies-of-scale where, in a given industry such as automobile, the manufacture of component parts can be carried out in plants in separate partner countries.[5]

Intercountry specialization is based on the theory of comparative advantage resulting from differences in resource endowments. However, most developing countries have similar resource endowments with a scarcity of capital, skilled labor, and entrepreneurial talent and abundant amounts of unskilled labor and perhaps land resources. It has often been argued that the benefits of integration would be much smaller among developing countries than among developed countries (Mennes, 1973:4 and Balassa, 1961b).

Competition

The enlargement of the market with integration may affect the degree of competitiveness and productive efficiency in addition to the initial production relocation effects. According to Perroux (1954:482), the effect of economic integration on the degree of monopoly is the decisive factor in determining the economic consequences of integration. Although Perroux may have overstated the significance of changes in the market structures, the impact of competition with integration is of primary importance. It also influences other factors discussed in this chapter.

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[5] An example is the complementary scheme pursued by private industry in ASEAN in the automobile industry. The production of components and its allocation is agreed upon through negotiations with final approval of the respective governments.

However, opinions among economists differ widely as to the possibilities of competition in an integrated area. Some believe that integration will increase the power of monopolies and cartels. Others maintain that cartel agreements would be reached. And some contend that economic integration leads to more competition (Balassa, 1961a:163-5).

The meaning of the term "competition" as clarified by Scitovsky (1958:124) should not be understood to mean merely large number of firms coexisting in a market, but should refer to the ability and willingness of producers to encroach upon each other's markets. Competitive pressures can take the form of price and nonprice competition. The latter includes joint research development of new products. Competition is desirable because it contributes to the elimination of inefficient producers and provides inducement for technological improvement in product development and input use. However, any proposed cooperation among producers will lead to restrictive practices which can hinder the exploitation of the advantages of a wider market.

Various factors contribute to the increase in competition in an integrated area. Firstly, a wider market sustains a greater number of efficient producers. Secondly, in industries where only one or a few firms exist in one country, the removal of tariffs and other restrictions increases the number of potential competitors. Yet, there may be a tendency for producers to form supranational cartels in some industries to counter intensified competition by dividing up the market to preserve the market structure. There is evidence that "many politically influential industrial groups have accepted the establishment of the Common Market only in the hopes that cartels and mergers will succeed in averting the outbreak of unlimited competition among producers" (Machlup, 1976:75).

Regarding the beneficial effects of increase competition, Dell (1966:70) argued that "in general, the evidence on the effect of competition on efficiency is by no means as straight as some people appear to believe." He would argue that there is no evidence to support the idea that the most efficient industries are necessarily those in which competition is most intense. On the other hand, others (in particular Scitovsky, 1958:10) strongly believe that the major gains in productive efficiency come from competition. He argued that "the main results of integration are shown to be various consequences of the increase in competition which common market is almost certain to bring about."

In general, competition as a consequence of integration will not fail to bring a reduction in cost as long as price information is not increased and restrictions and other obstacles to competition are not removed. Furthermore, the beneficial effects of removing these impediments will prevail, given that member countries will not increase tariffs and restrictions toward third countries (Balassa, 1961a:14).

External Economies

According to Balassa (1961a:144), integration would give rise to external economies through the interdependence of industries. The enlargement of the market size would cause a concentration of industrial activity in particular locations through polarization or "growth points". The external economies which result will include the introduction and improvement of technological and managerial skills, economies of specialization, indivisibilities, interindustry transmission of innovations and better use of findings from research and development.

However, in spite of the large amount of funds channeled to research and development by large firms vis-a-vis the expenditure of small firms, recent studies do not provide evidence of a superior performance by large firms regarding innovation. Technological advance may not accelerate as a result of the formation of economic integration. Furthermore, the reductions in cost due to external economies are not necessarily a function of the integration process alone. Rather, they result from the process of industrialization itself. However, the extent to which integration can attract new investment (private foreign or domestic) will depend on the degree of the reduction of the external costs attributable to integration.

Now if growth does accelerate because of external economies, real income will increase among the integration partners. This growth will have a beneficial impact by lessening the degree of any trade diversion with third countries which may have resulted from the regional formation in the short-run. The degree of reduction will naturally depend on the income rate of growth and marginal propensity to import among the integration partners (Young, 1970:101).

Factor Mobility and Distribution

If there are no restrictions on factor movements, as in a common market, one of the most likely consequences of economic integration is that factors of production of the integration members will be attracted to one or a few attractive growth poles, which conceivably could be located in only one of the participating countries. This polarization phenomenon in industrial activities in specific locations can be attributed to such forces as external economies, established infrastructure, fiscal and monetary incentives, skilled labor, and conducive environment. Up to a certain degree of concentration, the high efficiency of production factors in these areas will cause a movement of factors from the low to high growth areas. There will be partner countries which may lose factors of production. This loss will present a dilemma to the integration partners because, on the one hand, maximum growth is achieved by utilizing resources in the most efficient way and on the other hand, the concept of only one partner developing while another is stagnating is unacceptable. The possible solution would be to either restrict factor mobility (causing an efficiency loss) or allow factor movement with some compensation scheme. The above relates to the "spread" and "backwash" effects of integration as discussed by Brown (1961) and Myrdal (1957).

The concentration of industrial activities could produce the following effects. Firstly due to increasing demand, the growth area will purchase greater amounts of raw materials and consumer goods from other regions inside the integration area. Secondly, the migrant labor force is likely to transfer part of its income generated in the growth areas to the backward areas, giving the latter a net inflow of labor factor payments. Finally, the likely increase in labor costs in the long run will subsequently decrease the attractiveness of the growth areas. In practice however, empirical estimates of these spread effects are weak and uncertain (Ohlin, 1956:99). These effects reinforce the argument for a sound and equitable compensation agreement and a regional investment policy even at the expense of some efficiency loss.

Factor Availability

The enlargement of market size does not necessarily ensure that investment funds are available. An important constraint facing most developing countries is the availability of funds for investment. It is reasonable to assume that as real income increases in the integration area, domestic (private) savings will in general increase as well. However, account must be taken of income distribution among partner countries as well as personal income distribution within each country. Public savings will be influenced by two opposing factors. One effect would be that if integration results in an increase in industrial activity, public revenues will in general increase. The other effect will be the loss of revenue because of the removal or reduction of import duties.

The volume of both foreign public funds and foreign private investment may be expected to increase. The *former* because of greater bargaining power on the part of the integration partners, either as a country or as a group, and because of economies of scale, more attractive projects can be proposed to the capital supplying countries. The *latter* may increase because projects put forward for financing through private funds will be more profitable because of their larger, more efficient size. Regardless of these considerations, multinational corporations of third countries may also want to invest within the integrated area because of the enlarged market and access to these markets if a common protective trade policy is adopted by the integrated partners.

Large-Scale Economies in Research

On the regional level, further gains could be expected from coordination of research. If two countries acting independently and differing in size were to spend on research and development a sum proportional to their national income, the lower aggregate amount spent by the smaller country would place it at a disadvantage. The small country would have a disadvantage in terms of the size of the research enterprise. In addition, a larger and more diversified economy can take better advantage of the fruits of research. From the perspective of developing countries, a coordinated research effort would make better sense in view of limited trained personnel.

Other Factors

The enlargement of market size through economic integration will tend to create an optimistic attitude in the private sector and raise expectations for future growth. Private enterprise would also expect a reduction of risks and uncertainties in foreign transactions.

The risk elements in foreign trade can be attributed to two causes--uncertainties with regard to restrictions existing at any point in time and uncertainties with respect to economic policies. The first type is associated with the complexities of administrative regulations on foreign trade such as tariff classification. Other uncertainties relate to foreign exchange restrictions and import quotas. These risks and uncertainties in foreign transactions may also interfere with the application of large-scale technology, which prefers a large and stable market for its operation. In view of the dangers of the foreign markets, producers are often unwilling to invest in equipment and machinery to attain greater economies of scale.

For the economy from a nation's viewpoint, the uncertainties of foreign markets mean that a government is often compelled to encourage the manufacture of some products of strategic importance even though it is not comparatively advantageous to do so. In terms of security and strategic reasons (in food and non-food sectors) there will be justification for keeping within a country's boundaries those products which are vital and indispensable. Nations therefore often devote a substantial proportion of resources to economically unproductive uses and for limiting the economically profitable use of resources in order to safeguard their national interests.

Economic integration among a group of nations will mean a permanence of commitments as far as reduction and/or abolition of tariffs and other forms of trade restrictions are concerned. Integration thus removes some of the uncertainties associated with these restrictions and with changes in policies as well. However, uncertainties due to possible changes in monetary, fiscal and other policies will continue to remain as long as harmonization of economic policies is absent.

The reduction of risks and uncertainties will thus create a more optimistic expectation and will possibly lead to higher levels of investment (domestic as well as foreign) and in intra-regional trade. Consequently, larger capacities and more efficient production units will generate a higher level of income, in turn effecting a greater demand for goods and services. The enlargement of a protected market creates new investment opportunities that were not attractive when markets were restricted within national boundaries. Also, the possibility of selling in a bigger market and the benefits of getting behind the tariff wall should induce an increased inflow of foreign capital.

Conditions for Successful Integration

A number of economists have advanced propositions or conditions that will lead to the realization of economic or welfare gains from economic integration.[6] These propositions determine, a priori, the possibilities of welfare gains. The propositions of Meade (1968) for the establishing of a successful customs union are presented below.

a. A customs union is more likely to raise welfare the higher the proportion of trade conducted with the union partner, and the lower the proportion with the outside world. This proposition implies that demand elasticities are high for the partner's products and low for the non-partners.

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[6] These propositions can be found in Allen (1961:317-9), Lipsey (1960), Meade (1968) and Balassa (1961a).

b. A customs union is more likely to raise welfare the lower the total volume of foreign trade relative to domestic purchase prior to the formation of the union.

c. A customs union is more likely to bring gains the greater the degree of overlapping of protected commodities produced by the partner countries prior to the formation of the union. The gains will be larger the wider the differences in production costs. This proposition also indicates that, accordingly, the possibilities for future specialization among member countries will be intensified.

d. The gains from a customs union will increase the larger the economic area of the union. As the area expands, the gains from production reallocation increase.

e. The higher the preunion tariffs, the lower will be the losses from trade diversion and the greater the extent of trade creation with its corresponding consumption gains for partners. At the same time, the possibility for losses from trade diversion will be greater the higher the common external tariff.[7]

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[7] For a detailed analysis of the measurement of the height of a tariff and its importance to economic integration, see Milnes (1976:59-65).

On the basis of propositions presented, one can conclude that, ceteris paribus, an economic cooperation arrangement is more likely to have beneficial effects the more competitive the structure of the participating members, the greater the differences in the cost of goods produced prior to its establishment, the larger the size of the region, the shorter the economic distances between the member countries, the higher the level of preintegration tariffs and the greater the degree of preintegration economic relations between the participating members.

CHAPTER III
ECONOMIC INTEGRATION AND THE DEVELOPING COUNTRIES

The initial theory of economic integration dealt almost exclusively with customs unions among Europe's developed economies.[1] These traditional theories were mainly concerned with the static gains that may be derived from changes in the existing pattern of trade under the usual classical assumptions.[2]

This emphasis of static effects in the traditional theory of economic integration is not at all surprising because firstly, it is consistent with the static approach in international trade theory of which economic integration is conceived as "that branch of tariff theory which deals with the effects of geographically discriminating changes in trade barriers" (Lipsey, 1960:496). Secondly, it is consistent with the relative importance of adjustments likely to occur once a group of developed countries decides to integrate. Their problem is not primarily one of economic development but of relatively marginal adjustments in production and consumption patterns.

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[1] The European Economic Community (EEC) and the Council for Mutual Economic Assistance (CMEA).

[2] These assumptions include full employment, constant returns to scale, perfect mobility of production factors, perfect competition, and equality of private and social costs (see Robson, 1980 and Demas, 1965).

Although the market and planned economies of Europe were the early principal international economic integration schemes, increasing attention was directed in the 1960s to similar arrangements among the developing countries. Some economists considered the aspects of economic integration in less developed economies within the framework of orthodox theory (Meier, 1960 and Allen, 1961). Most of the recent studies, however, suggest that although traditional theory is not entirely irrelevant to developing countries, economic integration should be examined as follows (Jaber, 1971).

(i) Emphasis should be on dynamic rather than static effects in evaluating the desirability of economic integration among developing countries. The present economic structure is too dependent on developed economies. The planned changes should therefore not be marginal but structural in nature and emphasis should be on future rather than present production and consumption patterns.

(ii) Economic integration between developing countries should not be treated as a tariff issue. It should consider various aspects which could improve the international trading position as well as accelerate economic growth and development.

Relevance of Traditional Theory to Developing Countries

Traditional economic integration theory attempts to determine the desirability of customs unions from the perspective of world welfare, with static effects as the criteria. Many arguments have been presented by economists who think that traditional theory of economic integration has limited applicability to developing countries. These arguments to refute traditional theory will next be discussed.

The criterion of trade creation in traditional economic integration theory which was pioneered by Viner (1950), Meade (1956), Lipsey (1957) among others suggests that developing countries could not enjoy the benefits of integration arrangements. They contended that trade diversion will dominate and prevail over trade creation in any integration schemes embracing developing countries. In determining the applicability of traditional economic integration to developing countries, they question

a. the extent the characteristics of the developing countries would favor trade creation, and
b. whether trade creation is the significant criterion for evaluating integration among such countries.

Of several qualifying propositions[3] advanced a priori to determine the possibilities of establishing a successful customs union, it appears quite likely that the circumstances which would favor trade creation would occur when the existing external trade of prospective integration partners is small relative to domestic production and where a high proportion of trade is already conducted with the prospective integration partner.[4] In most developing countries however the existing external trade with developed economies is usually large relative to domestic production and intraregional trade is an insignificant proportion of total trade.[5] These characteristics of developing countries are precisely the opposite of the a priori propositions that favor trade creation. Developing countries in fact rely heavily on the export of primary commodities, which are usually freely traded in world markets without much protection. It would be unlikely therefore, with integration, to significantly affect the allocation of resources in the production of these commodities. Imports of developing countries, on the other hand, consist mainly of intermediate capital inputs and final manufactures, which many such countries either do not produce or produce in only limited amounts. In short, developing countries are heavily dependent on developed countries.

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[3] Most of these propositions were advanced by Meade (1956) and Lipsey (1957) and are discussed in detail in Balassa (1973).

Of the several empirical studies in the measurement of the static gains from economic integration for the industrial economies, all the results (Table 3.1) show these gains to be

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[4] This proposition implies demand elasticities are high for partners' products and low for third countries' products.

[5] The magnitudes of intraregional trade of various economic integration schemes are given in a later chapter.

Table 3.1 STATIC GAINS OF ECONOMIC INTEGRATION:EMPIRICAL EVIDENCE

Study	Case	Gain (% of GNP)
1. Scitovsky, T. Economic Theory and Western Integration. Stanford: Stanford Univ. Press, 1958, pp.64-70	Effects on the pattern of trade of a customs union among EEC countries, Scandinavian countries, and Britain based upon their 1952 trade matrix.	0.005 of GNP matched by equal loss to the rest of the world due to trade diversion
2. Johnson, H.G. 'The Gains from Free Trade with Europe: An Estimate', Manchester School, (September 1958) pp. 247-55	Effect on the value of British trade from joining EFTA, estimates for 1970	About £225 mi., which is about 0.01 of British GNP.
3. Wemelsfelder, J. 'The Short-Term Effect of the Lowering of Import Duties in Germany', Economic J. (March, 1960), pp.94-104	Effects of lowering German tariffs during 1956-57 by more than 50%.	DM 375 million or 0.0018
4. Singh, A. in Liebenstein, H. 'Allocative Efficiency vs. X-Efficiency', American Econ. Review, (June, 1966), pp.392-415.	Gains from trade among LAFTA countries, using Scitovsky method	0.000075

Source: Jaber 1971.

extremely small. Even if a margin of error and inadequacy of estimates is allowed for, the results obtained imply that the static gains are very insignificant. Scitovsky (1958:68) elaborated thus, "it certainly seems that . . . the benefit from increased trade and specialization is very unimportant in the case of Western Europe."

If the case of the Latin American Free Trade Association (LAFTA) is any indication of developing countries, the empirical estimates reveal that the static gains from economic integration are even more insignificant compared to developed countries. As discussed earlier, this can be explained by the relatively small percentage of intraregional trade, inflexibility of economic structure to undertake necessary changes and greater degree of market imperfections.

Meanwhile, there is general consensus that the dynamic effects are far more important than the static effects of economic integration.[6] The dynamic aspects will increase the growth of developing countries through the impact of elements such as large scale economies with the enlargement of market size, reduction in risks and uncertainties in intraregional trade, increased competition, higher rates of capital formation, increases in foreign investment and faster technological gains. The whole matter has been summarized appropriately by Mikesell (1965:206) as follows

> the fact that analytical work on common markets has been largely directed to problems of welfare under somewhat static assumptions . . . does not mean that the conclusions reached have no relevance for economic growth, or for developing countries generally. I believe, however, that the theoretical analysis of

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[6] For example, see Kitamura (1966:55-56), Mikesell (1965:206), Demas (1965:86-87), Scitovsky (1958:8), Hazlewood (1967:8) and Pinder (1968:92).

> customs unions or of regional preference arrangements generally should be directed towards the problem of their impact on the direction of investment in the developing countries for future output rather than limited to an analysis of welfare implications of shifting existing trade patterns.
>
> There are two general reasons for this conclusion, the first of which also has applicability for regional markets among industrially advance countries. One is that plans for the creation of a customs union or free trade area usually involve relatively long periods for fruition so that the initial impact, and perhaps the most important one, is on expectations regarding future market opportunities rather than on existing trade patterns arising directly out of changes in intraregional trade restrictions. Thus what is most relevant are the effects on investments which will determine trade and production patterns a decade in the future, as compared with what they might have been in the absence of the creation of regional trading arrangements. The second factor, which is related to the first, is that developing countries are undergoing rapid and far reaching changes in the structure of their production and trade. Very often, there is relatively little trade among the members of regional trading blocs to begin with and virtually no exports of manufactures either between members or to the rest of the world.

The argument for regional economic integration among developing countries is thus largely based on the prospective gains from rationalizing the emerging structure of production and trade rather than on gains on existing structures. Empirical evidence on the magnitudes of the dynamic effects sheds some light on its relative importance compared to the static effects. Using Balassa's method for the Central American Common Market (CACM), Nugent (1974) yielded estimates of gains which were of the same magnitude as those obtained for the EEC. In addition, empirical estimates of CACM by Yotopoulos and Nugent (1976:352), using two methods (export preference approach and aggregate production function approach) which incorporated some dynamic effects, concluded that "by joining a customs union of similar levels of development and with similar economic structures, LDCs may be able to take advantage of some of the dynamic as well as static benefits of international trade."

Although it has been advanced that the dynamic effects are relatively more important than the static gains, empirical evidence on the magnitudes of these effects is, however, far from conclusive.

Economic Integration as an Approach to Economic Development

Trade diversion was considered by Viner (1950) a negative production effect which reduces welfare. In the context of traditional theory, even this was criticized by Lipsey (1957:41) who stated that "when consumption effects are allowed for, the simple conclusions that trade creation is good and trade diversion is bad are no longer valid." However, in viewing the integration of developing countries in a dynamic perspective, more serious limitations can be found. Firstly, trade diversion, deemed a negative effect by Viner, is ascribed a positive role. To a developing country considering membership in an integration scheme, the choice in the adoption of an import substitution policy would then be between the trade diversion in favor of the domestic producer at any cost and trade diversion in favor of the most efficient producer in the region. There seems little doubt that a pattern of industrialization based on greater specialization within the region will be more economical than one based on production by each country for its own domestic market. According to Cooper and Massell (1965:460-7), they view customs unions as an alternative policy of protection, in terms of the advantages that may be gained by swapping markets for the products of each participant's high cost industries. Their approach assumes industrialization as an explicit target of economic policy. They make the point that developing countries may value industrialization so highly that they are willing to forgo a certain amount of achievable income in order to achieve this end. By allowing integration partners to participate in one another's markets, economic integration makes it possible for the participants to maintain a protected regional domestic market at less sacrifice than is otherwise possible through nonpreferential protection. In a similar vein, according to Linder (1967:126), "trade diversion, however, is nothing but the manifestation of the success of additional efficient import substitution and is not detrimental. Indeed, to the extent that it consists of diverting imports of noninputs away from advanced countries, it enables the concentration of scarce foreign exchange in input import, thereby exerting a leverage on capacity use and growth."

The availability of foreign exchange is one of the important considerations determining countries' actual imports. One of the arguments is that trade diversion in consumer goods would make available more foreign exchange which can then be used to purchase increasing amounts of capital goods from the developed economies.[7] On balance, therefore, depending on the rate of economic growth with integration, total imports of a regional integration of developing countries might not be reduced. The contrary may be true. What is changed in the long run by the formation of a regional integration arrangement would be the patterns and structure of trade.

In addition, due to the slow rate of growth in the quantity demanded in individual developing countries, a regional grouping would make import substitution more efficient in reducing costs over a shorter period of time. In the case of basic or heavy industries, where the minimum optimal size of production requires a large capacity, even with integration, the size of enlarged market may be insufficient to attain a competitive position. Furthermore, the evaluation of economic integration among developing countries should not be limited to production and consumption effects. The income and employment effects, particularly when employment and underemployment exist, should be included as well. Demas (1960:16) stated when referring to economic integration in the West Indies that "in developing countries . . . it cannot be too often emphasized that while the money cost of the new trade-diverting production may be quite high, its real social opportunity cost may be very low, or even possibly zero. What is therefore required in the case of countries with surplus labor is an economic calculus which would set against the loss in economic efficiency arising from trade diversion, the increase in the net social product from the creation and/or more productive employment."

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[7] Generally, when imports of developing countries from the developed economies are disaggregated, trade diversion appears to occur only in non-durables, and to a less extent, in durable manufactured consumer goods. In a static situation, the imports of capital goods are unlikely to be effected. The problem of foreign exchange will be discussed in a later chapter.

In summarizing therefore, trade diversion related to developing countries is more highly valued in a dynamic context relative to the static context in traditional theory. To write off regional integration schemes in developing countries because they are trade diverting will be misleading. The arguments presented above suggest that the effects of economic integration viewed from a dynamic setting are favorable to developing countries and possibly to world welfare.

Secondly, the evaluation criteria in judging the desirability of economic integration among developing countries cannot be limited only to the generation of trade as applied to developed countries. Economic integration is viewed here by the developing countries as an approach to economic development. Wionczek (1969:13), when referring to integration agreements among developing countries, stated that

> trade liberalization program is not considered the decisive element of the regional economic and cooperation process although it represents a general framework. In this respect, these schemes differ basically from the approaches adopted by the developed countries in the past.

Cooper and Massel (1965:462) further elaborated that

> the mere fact that pre-union protection exist, suggests that trade is not viewed as desirable by many

> countries, notably by the majority of the less developed countries. Although present customs union theory leads to the conclusion that a world wide union would be optimal, few of these countries would accept this view. Indeed, a principal objective of economic integration among less developed countries is to foster industrial development along more economic lines.

This should not be taken to imply that advocates of integration in developing countries do not regard foreign trade as having a significant role. On the contrary, they argue that the role of trade in a development perspective is more important than indicated by conventional trade theory (Linder, 1967:36). Conventional theory views exports as a means to finance imports whereas for developing countries, trade is regarded within the complex issues of the development process.[8]

Since economic integration is viewed as an approach to economic development, and if developing countries strive to achieve a policy of diversification and industrial growth through import substitution in a regional context, "a union might very well need more protection than that available to the individual prior to the establishment of the union" (Wionczek, 1966:9). The argument for more protection is derived from the fact that while the economies of most of the developing countries in an integration scheme may be competitive, they cannot be complementary without a dynamic transformation to specialize in production and extend their markets under the umbrella of higher protection. The reduction or elimination of trade barriers before this transformation process will not increase their trade appreciably (Chou,1967:356). Balassa (1961b) noted that dynamic considerations may warrant the temporary application of protectionistic measures and inefficiencies of protectionism would be reduced as the size of the protected area increases. This implies an "infant" industry type of protection. Inefficiencies of protection would be reduced not only as size of protected market increases, but as time progresses too. Perhaps a qualification is required pertaining to the competitiveness and complementarity terminologies. Viner (1950) suggested that the more the integration partners are competitive, the more favorable economic integration would be. The developing countries, being essentially specialized in primary products, are therefore competitive in the Vinerian sense. This general state of competitiveness, according to Viner, therefore suggests the desirability of economic integration. However, due to the fact that most developing countries produce primary commodities and these are exported to developed countries, integration would not increase intraregional trade. The criterion of competitiveness and complementarity is not applicable at all to developing countries as it presumes a developed country type of economic structure (Balassa, 1965:25). The welfare effects refer to manufactures and consumption goods rather than the traditional exports or primary products (Demas, 1960:21). Therefore, with integration, developing countries through a coordinated and planned investment harmonization policy should purposefully develop a potential complementarity and minimize the cost of adjustment. As industrialization proceeds, they will subsequently be more competitive but what they should strive for meanwhile, is a pattern of investment which will introduce a substantial degree of complementarity for the future, and with structural transformation of the economy, reduce the overdependence on trade with the developed countries (Mikesell, 1965:212)

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[8] Controversy surrounds the relationship between trade and economic development. See for example MacBean (1966).

Characteristics of Developing Countries

The case for economic integration as an approach to development is based upon the need of developing countries to foster economic development and growth in conjunction with the presumably favorable dynamic effects of their integration (discussed in the previous section). But before proceeding, a general review of the present economic situation and characteristics of developing countries is needed. The economic structure of most developing countries is typically less diversified than in the developed economies, specializing mostly in primary products. Agriculture accounts for a large share of national income and labor employed. The range of industries observed is narrow and only marginally represented. The prospects for primary commodity exports are unfavorable due in large part to the low price and income elasticities of demand and the short-run fluctuations in export earnings due to price changes (Linder, 1966:35). Therefore, exclusive specialization in producing and exporting primary products is not advocated as a sound strategy in the economic development process.[9]

In their attempt at diversification, the developing economies too encounter problems in the production and export of manufactured goods. This stems from internal as well as external constraints. The internal constraints are lack of capital investment, smallness of domestic markets, inadequate transportation and communication network, infrastructure and the structural inflexibility of their economies. The internal constraints are due in part, to policies and practices of developing countries themselves, which often are not directed toward the encouragement of the export of manufactures. The external constraints are market access due to the high tariff rates and nontariff barriers on the manufactured exports of developing countries by developed nations. Apart from their own initiatives, Morrison (1976) noted that the prospects for the developing countries increasing their manufactured exports depend to a significant degree on actions taken in developed countries.

Another feature of developing countries is that most of their exports is with developed countries, usually far from their production location instead of their neighboring developing countries. This excessive structural dependence of trade on the economies of the industrial nations will make the developing countries more vulnerable to world economic and trade policy changes.

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[9] To refute the notion that industrialization was the engine of growth and development, Hughes (1976) stated that countries that are productive, diversified primary exporters have done very well in economic growth.

In view of their unique set of common aspirations, problems and economic structures discussed above, the developing countries have, in their search for a new development strategy, sought to reduce their dependency away from the developed nations in their quest for economic development and progress. It is in this context that arguments for economic integration as an additional tool towards economic development through greater economic cooperation among the developing countries will be focussed.

The previous section has dealt with the applicability of traditional economic theory to developing countries and several arguments were made as to why these orthodox theories, which were formulated to explain the integration process of western developed economies, were inappropriate in explaining the desirability of economic integration schemes among developing countries. Due to the insignificance of the static effects of trade, economic integration for developing countries was viewed more for its dynamic effects, on emergent or future rather than present production and trade effects. Economic integration then should be treated as an approach to economic development. In the following section, we will examined these "new" approaches, how developing countries can accelerate industrial development by integrating their economies regionally, increase the availability of foreign exchange and attain a greater bargaining position in external economic relations in their quest to further their economic development and international economic positions.

Economic Integration and Industrialization

To promote economic growth and development, developing countries have at least two alternative pathways. The first is an inward-looking approach and the second, an outward-looking approach.[10] The inward-looking approach involves an implementation of policies designed to encourage self-reliance in developing manufactures and internal technologies in the efficient utilization of the country's resources. This approach was influenced by the view that adverse external market conditions for primary exports and the lack of an ability to compete in manufactured exports would not permit developing countries to attain high rates of economic growth by relying on export promotion. This approach suggested that these countries should expand manufacturing industries oriented towards domestic markets, i.e., pursue an autarkical pattern of industrial development. The *outward-looking* approach is based on policies designed not only to encourage free trade but the free movement of production factors and multinational corporations. An outward-oriented approach should not be interpreted to mean favoring exports over import substitution. Rather, it is characterized by the provision of similar incentives to production for domestic and for export markets. In addition to this lack of bias against exports, countries applying this approach generally have positive real interest rates, adopt realistic prices for utilities, narrow interindustry differences in incentives and provide for automaticity and stability in the incentive system. On the whole, these countries minimize price distortion and rely on resource allocation and rapid economic growth. This alternative, however, has certain shortcomings, not the least being vulnerability to the vagaries and fluctuations of the international economic system--obstacles that do exist with certain domestic policies within the national boundaries of the developing countries.

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[10] The literature on industrialization strategy is extensive. See for example: Streeten (1973), Ul-Haq (1973), Todaro (1977), Krueger (1980) and Balassa (1980).

Industrialization is generally recognized as the most dynamic factor in the process of accelerating growth in economic development. It entails a structural transformation of the economy, the dynamic effects manifested in the intersectoral linkages. Industrialization has been such an ultimate goal to developing countries that some economists consider it as a public good (Cooper and Massel, 1965 and Robson, 1980).[11] Industrialization therefore signifies economic progress and is generally regarded as the cornerstone of development policy planning in most developing countries. The choice of alternative industrial development policies, in conjunction with factors such as country size, natural resource endowment, location, preferential ties, foreign investment, foreign aid, education and political and social conditions, will to a great extent, influence the results of industrial and economic development.[12]

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[11] A public good in the sense that exchange for which the member is willing to accept certain sacrifices with respect to other social objectives.

The early stages of industrial development were contingent on demand and savings generated in the primary sector. Surplus generated in the agriculture and/or mining sectors was, more often than not, associated with export expansions. The initial process of industrial development may be accelerated if tariff protection were complemented by the imposition of nontariff barriers. This led to the first stage of import substitution. With few exceptions, experiences show that all industrial and developing countries protected their incipient manufacturing industries for domestic markets. However, there were differences as regard the rate and form of protection. Developing countries often applied high tariffs and quantitative restrictions that limited, or even excluded imports. The high protection however, at the same time, discriminated against exports through the explicit and implicit taxation of export activities. Explicit taxation may take the form of export taxes, while implicit taxation occurred as a result of the effects of protection on the exchange rate (Balassa, 1980:5). High protection has caused inefficient, high cost production in manufacturing. Taxes on primary exports, where present, have discouraged production as have unfavorable exchange rates.

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[12] A discussion of the importance of these factors is found in Balassa (1980).

Indeed, there was no need for high protection, at this first and "easy" stage of import substitution which entailed the replacement of imports of non-durable consumer products and their inputs by domestic production.

Developing countries have a comparative advantage in the production of import substitution goods which requires intensive and unskilled labor. In many cases, the efficient scale of output for such goods is relatively low, and production has not involved the use of sophisticated technology.

Due to the limited market size in most developing countries, the growth rate of output in the process of import substitution is short-lived. Maintaining high industrial growth rates then necessitates either moving to the second stage of import substitution or turning to an outward-oriented approach in the exportation of manufactured goods. The second stage import substitution policy which represents an inward-looking strategy will be examined first. The adoption of this approach was taken in view of the adverse external market conditions for primary exports and the lack of competitiveness in manufacture exports. Import substitution in the second stage necessitates the replacement of imports of intermediate goods and producer and consumer durables by domestic production. Examples of intermediate goods are petrochemicals and steel which tend to be highly capital intensive and subject to economies of scale. Efficient plant size is large compared with the domestic needs of most developing countries. Moreover, profit margins are small and organizational and operational inefficiencies can contribute to high costs.

Producer durables such as automobiles, refrigerators and air-conditioners, are subject to scale economies--due largely to horizontal and vertical specialization. The reduction in product variety which results will help to lower production costs through longer production runs. Developing countries are usually at a disadvantage in the manufacture of highly physical capital-intensive intermediate goods and skill-intensive products and consumer durables because of the relative scarcity of physical and human capital. Small domestic national markets make it difficult to exploit economies of scale and high production costs is the end result. The net exchange savings moreover tend to be small because of the need to import intermediate inputs and machinery. Discrimination against exports in favor of import substitution distorts output and input prices in the first phase and work against the development of manufactured exports.

The slowdown in economic growth as a consequence of the pursuit of an inward-oriented policy strategy led to an outward-oriented policy reform. The reforms generally involved providing subsidies to manufactured exports, reducing import protection, adopting positive exchange rates, and introducing greater realism in the pricing of public utilities. The outward-oriented development strategy should not be interpreted to mean favoring exports over import substitution. Rather, it is characterized by the provision of similar incentives to produce for domestic markets as well as for exports. An outward oriented policy relies upon market mechanism for efficient resource allocation and rapid economic growth. Empirical evidence thus far is quite conclusive in favor of countries adopting an outward-looking approach (Balassa, 1982).

Due to the enlargement of market size, integration among developing countries offers the opportunity for new industries, as well as existing industries, to take advantage of production economies. The efficient scale of production of most new manufacturing industries is relatively high and highly capital intensive.[13] Therefore, the larger the market size, the greater is the likelihood that conditions will permit the profitable operation of new industries. The minimum efficient operating scale varies between industries and the fact that a large number of industries are operating below capacity in developing countries is an indication that the smallness of market size is one of the important elements contributing to the high cost prevailing in these industries (UNCTAD, 1967). Furthermore, if developing countries were pursuing a development strategy based on balanced growth, integration would still enable member countries to achieve this end without being constrained by it (Linder, 1967:124).

Industrialization in a regional framework allows the possibility of higher allocative efficiency through a coordinated

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[13] Particularly the intermediate products such as petrochemicals and steel, i.e., basic industries. See Balassa (1980).

(harmonized) investment strategy and permits the exploitation of advantages associated with specialization. Specialization, however, in an integration context, has to be examined in conjunction with aspects of competition. The process of specialization can take place on a product or process basis.[14] Any benefits that accrue to increase specialization must be weighed against transportation costs. Duplication in industrial activities is a particular problem in developing countries due to limited market size, either within national or regional boundaries. A coordinated regional investment policy or production agreement will aid these countries in reducing over-capacity and high production cost. Associated with the advantage of specialization are the effects of competition applicable to developing countries. Competition, as the argument goes, begets efficiency. However, in the case of developing countries, competition is not emphasized in the same manner as in developed countries. Developing countries, however, often seek a broadening of the dimensions of their economic structure, on the complementary rather than on the competitive aspects of industrial growth (Hughes, 1976:298).

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[14] Product specialization means that countries will produce different varieties within a product category. Petrochemicals, fertilizers and machinery illustrate possibilities for production specialization. Process specialization means that a group of countries agree to specialize in the different components necessary for producing a product. For example, the manufacture of components for the transport vehicle equipment provides possibilities for process specialization (Balassa and Stoutjesdijk, 1975). These will be further discussed in a later chapter.

The drive towards industrialization and the transformation of the economic structure require huge amounts of foreign exchange to finance the import of capital or intermediate inputs required by the growing manufacturing sector. Due to the internal and external constraints (discussed earlier), most developing countries are experiencing difficulties in maintaining sufficient foreign exchange to finance the capital and intermediate inputs required in their development effort. This is true whether a country is adopting an inward-looking approach through import substitution, or an outward-looking approach in its choice of development strategies. For an open or mixed economy, the problem is particularly acute during recessionary periods. The strategic importance of customs unions to enhance the availability of foreign exchange and its role in the development process was emphasized by Linder (1967).

It is expected that coordination of regional investment and trade policies and integration among developing countries can increase foreign exchange savings to further increase input imports. With integration, intraregional trade relative to extraregional trade is expected to increase. This substitution will allow member countries to free more of the foreign exchange required for essential capital imports from industrialized countries. Furthermore, if all industrial sectors within the integrated area are considered as a unit, output per capita might be higher than non-integration output of the countries involved, and import needs likewise, will be decreased.[15] This will therefore reduce the need of foreign exchange for imports.

Increasing Bargaining Position through Collective Approach

The dependency of the developing economies due to size and primary exports principally to developed countries means that external economic relations, which have largely been ignored in traditional theory of European integration, will constitute an important influence in the integration process between developing countries (Axline, 1977:89). Developing countries either singly or as a nonaligned block, have tried to effect changes in international relations with the developed countries.

Since most developing countries are highly dependent on international trade, investment and aid, any negotiation would be from a position of weakness. It is not difficult to see the effect of increased leverage in bilateral negotiations through a collective approach vis-a-vis the rest of the world. With integration, developing countries can gain through negotiations on issues such as the stabilization of export prices and export earnings from primary products, market access, transfer of technology, and foreign capital investment inflow. Therefore, negotiating as a regional bloc will ensure a better deal for trade, investments, and aid. Although a collective approach in external economic relations is viewed as important, certain limitations must be expected from such a strategy. National interests will remain dominant over regional interests. The question of distribution of investment and the problem of an equitable distribution of benefits will have to be reconciled. On foreign capital inflow and the question of investment incentives offered, the need for a harmonization of incentives should be balanced against the adverse effects. Competition for foreign investment among regional partners may lead to overly generous offers of tax and other incentives by individual member countries.

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[15] In a study on ASEAN, fixed investment cost can be decreased by as much as 40% and unit cost of production by 30% in regional plants (Kansu, 1974:385).

Harmonization of investment incentives should not be standardized due to differences in priorities and investment climate that exist between countries, but should be formulated to eliminate the anomalies and loopholes to the advantage of all concerned within the integration partners.

Thus in short, the alternative for developing countries, is not between protectionism and free trade, but between national protectionism and regional protectionism (Mikesell, 1965). Therefore, in justifying the establishment of an integration arrangement between developing countries, integration becomes a means by which the developing countries can strive for goals that each could not attain on its own without an unbearable high cost. More specifically, integration permits developing countries to promote industrialization at a relative lower cost, and to increase its bargaining power in relation to third countries.

Methods of Regional Cooperation among Developing Countries

The three principal approaches to regional industrial cooperation will be reviewed here. The specific approaches adopted by past integration experiences and their comparative experiences will be elaborated on as will the problems of cooperation as a consequence of the adoption of such techniques.

The first approach involves preferential trading arrangement (PTA), the instruments of which include the extension of tariff preferences, either across-the-board or on a selective basis, liberalization of nontariff barriers on a preferential basis, long-term quantity contracts, trade finance at preferential interest rates, preference in procurement by government entities and other measures.[16]

The second approach is the industrial complementarity agreement which is a form of agreement for trade liberalization for one or a few industries or related groups of products in the context of a deliberate, planned rationalization of existing industry.

The third approach which is also limited to specified industries or products, takes the form of intergovernment schemes for the establishment of new large-scale industries on a regional basis, coupled with the provision of preferential trading arrangements for these products.

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[16] For more information, see the following: United Nations, Economic and Social Commission for Asia and the Far East (1973:38:42), Robson (1980:148-149) and Castro (1980).

In the PTA approach, particularly the across-the-board trade liberalization, the aim is to bring about product specialization in existing industries through the operation of market mechanism by the negotiation of a suitable tariff structure. The other approaches emphasize upon the planned specialization of the development of existing and of new industries, giving due consideration to the twin objectives of efficiency and equity. A variety of policy instruments, such as tariffs, fiscal incentives and administrative controls, is required to implement the desired changes in the pattern of production.

Trade liberalization could be implemented across-the-board or on a selective basis. The across-the-board trade liberalization approach involves the provision of a uniform margin of preference for the same products for all countries in the regional grouping. This does not necessarily mean the complete elimination of tariffs and quantitative restrictions. This was the type of arrangements implemented in the initial integration schemes among developing countries in Africa, Central America and the Caribbean. However, due to the difficulties arising pertaining to the issue of equity and polarization of industrial activity in the more developed countries, the across-the-board trade liberalization arrangements were modified to overcome the problems encountered.

Instead of a sweeping across-the-board approach which makes predictions difficult with its far reaching implications, a more cautious approach,i.e., a selective trade liberalization, is more favored in later integration schemes among developing countries. This involves a step-by-step product-by-product intergovernment negotiations, extending preferences on a regional most favored nation basis through a nation list approach, The common list approach involves trade liberalization for a list of specified products consisting of the same items in all participating countries. The national list approach requires the countries concerned to grant to each other specially tailored tariff and nontariff concessions over a range of product which may be different in each country.[17]

Industrial complementarity agreements represent a narrower approach to the promotion of regional industrial cooperation. This approach aims to promote specialization in a specific industry, or related components as in the automobile industry, in order to exploit economies of scale and to utilize excess capacity.

Early experience in the Latin American Free Trade Association (LAFTA) showed that this particular agreement has had limited applications. Not all countries in the integration scheme participated in the agreements either because they lack the industries which might benefit from such arrangements or that it ran counter to the interests of certain influential pressure groups in the usually highly protected industries existent in these countries. It is apparent that the willingness of member countries to absorb intraregional competition among existing manufacturing industries is limited because of the inefficiencies in their highly protected and narrow domestic market.

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[17] The difficulties and problems relating to these approaches can be found in United Nations, Considerations and Proposals for Regional Trade and Monetary Cooperation in the ECAFE Region. (Trade/RTMC/I) ECAFE, 10, Aug. 1970.

The common and nation lists have also been variously known as the Offer and Voluntary list and Request Matrix respectively. The offer list is one drawn by each partner state and offered for the tariff cuts voluntarily while the Request List is submitted by each partner prior to periodic negotiations on particular products that the members concerned would like other partner countries to consider for tariff reductions.

The third approach to industrial cooperation involves the promotion of investment in new large-scale industries to take advantage of the benefits of scale economies to serve regional market. The approach requires intergovernment agreement on the designation and location of new plants or industries among the integration partners. Equity participation and preferential trading arrangement for these products are normally integral parts of this approach. This form of industrial cooperation has been attempted in the Central American Common Market and in the East African Common Market. Two alternative negotiation procedures could be followed to establish large-scale industries in regional industrial cooperation schemes. These are the case-by-case and package approaches. The case-by-case or single industry negotiating approach, adopted in the Central American Common Market (CACM) and the Central African Union (UDEAC), though simple in approach, does not provide benefits to all participants at each round of the negotiations. Since the establishment of any single regional industry frequently imparts costs on all members except the designated host country, the alternative package approach attempts to overcome this problem. The package approach, which has been adopted by ASEAN[18] as a means to regional industrial cooperation, entails the simultaneous negotiation of several industrial projects, hence the name "package". It is not expected that each individual country will come up even in offsetting the total gains and losses. However, if regional members take account of these gains and losses, the package deal appears more likely to succeed.

Although the package approach appears to reduce some sources of conflict in the negotiation process, it would be naive to suppose that there will not be difficulties in the implementation process. Matters pertaining to the designation and location should, as far as possible, reflect the comparative advantage of the region. A possible disadvantage of a limited sectoral integration arrangement is that it would give rise to resource allocation problems vis-a-vis other sectors of the economy. These domestic distortions should, as far as possible, be minimized in the implementation of such industrial cooperation arrangements (Balassa, 1973). Despite these problems, this arrangement appears to offer the most practical approach in view of the flexibility it provides. Commitments can be limited in terms of the number of participants, industries or projects involved, and the specific terms and conditions with respect to price and tariff levels, fiscal and investment incentives.

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[18] The package approach to ASEAN industrial cooperation as well as other alternative programs will be examined in detail in a subsequent chapter.

CHAPTER IV
COMPARATIVE ASEAN ECONOMIES

Before the economic cooperation experiences among the member countries of ASEAN could be examined, it would be appropriate to review and compare the ASEAN economies, their structure of production and industrialization process.

ASEAN comprises a group of outward-looking middle-income economies.[1] In 1984, the five ASEAN countries had a combined population of 280 million, their gross domestic product (GDP) was about $206 billion and their annual merchandise trade exceeded $148 billion (Table 4.1). During the past two decades, these economies have been among the world's most dynamic and rapidly growing with real GDP growth rates of between 6 to 8 percent. Apart from the slower growth of the Philippines, all five members in the past decade grew faster than the world's middle-income countries (World Bank, 1986).

With the exception of Singapore, the ASEAN countries are richly endowed with natural resources, both agricultural and minerals, namely: rubber, oil palm, rice, sugar, petroleum, tin and other minerals. Except for Indonesia, the region's exports

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[1] Middle-income countries are classified by the World Bank as those with a per capita Gross National Product of $400 or more.

Table 4.1 BASIC ECONOMIC INDICATORS OF ASEAN

Country	Population mid. 1984 (million)	Area ('000 Km^2)	GNP per capita 1984 (US$)	Real Av. Annual Growth of GDP		Av. Annual Inflation Rate 1975-84 (%)	Exports as % of GDP 1984	Real Average Annual Input Growth (%)	
				1965-73	1973-84			1965-73	1973-84
Indonesia	158.9	1,919	540	8.1	6.8	17.4	29	11.1	1.4
Malaysia	15.3	330	1,980	6.7	7.3	6.2	48	8.0	7.5
Philippines	53.4	300	660	5.4	4.8	12.9	16	4.2	5.6
Singapore	2.5	1	7,260	13.0	8.2	4.4	132	11.0	7.1
Thailand	50.0	514	860	7.8	6.8	8.2	18	6.9	10.4
Middle-Income Countries	-	-	1,250	7.4	4.4	38.0	-	6.3	0.8

Source: World Bank, 1986
Ministry of Finance, Malaysia, Economic Report 1986/87

have been growing at rates well above that of the world average since the mid-1960s (World Bank, 1986). The continuing high export growth has provided the impetus for continued rapid growth for these resource based economies.

Due to its strategic locational advantages, the city state of Singapore has a long tradition of entrepot trade, especially with Indonesia and Malaysia. Despite its small domestic market and lack of natural resources, Singapore has overcome these limitations by intensifying human resource development.[2]

The ASEAN economies have experienced significant structural changes since the 1960s. The production structure is shown in Table 4.2. There was a continuous and significant decline in the production share of agriculture. This was accompanied by a substantial increase in the share for industry. Being the most important within the industrial sector, the share of manufacturing is also shown separately. Except for Singapore, the shares of the services sector for the other ASEAN economies were about the same in size and have remained relatively constant. The decline for Singapore was due to the reduced relative importance of her entrepot trade. The composition of the tertiary activities, however, varied among the ASEAN countries. The Philippines had a larger proportion of service output originating from trade, whereas Malaysia's government activities occupied a

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[2] Singapore is considered as an East Asian Newly Industrializing Country (NIC) normally grouped with South Korea, Taiwan and Hongkong for comparative analysis.

Table 4.2 PRODUCTION STRUCTURE OF ASEAN ECONOMIES

	Distribution of Gross Domestic Product (Percent Current Prices															
	Agriculture				Industry				(Manufacturing)[a]				Services			
	1960	1970	1980	1984	1960	1970	1980	1984	1960	1970	1980	1984	1960	1970	1980	1984
Indonesia	54	47	26	26	14	18	42	40	8	9	9	13*	32	35	32	34
Malaysia	37	31	24	21	18	25	37	35	9	13	23	19	45	44	39	44
Philippines	26	28	23	25	28	30	37	34	20	23	26	25	46	42	40	41
Singapore	4	2	1	1	18	30	37	39	12	20	28	25	78	68	62	60
Thailand	40	28	25	20	19	25	29	28	13	16	20	19*	41	47	46	52

Source: World Bank, 1986

Note: a Manufacturing is included within industry, but because of its importance, is shown separately.

* 1983 values.

larger share. Singapore's trading activities, as expected, dominated the services sector (ESCAP, 1983).

The common features of all ASEAN countries were their impressive high growth rates, high rates of capital formation and the openness of their economies in terms of the ratio of exports to GDP (Table 4.1). There were, however, a number of striking differences among the ASEAN countries. These distinguishing features are the substantial contrasts in their size in land area, population and different levels of development as reflected by their per capita income. The following section will review the peoples of ASEAN, population, land area, languages, religion and systems of government in the region (ASEAN, 1985). There is a great diversity of racial types in Southeast Asia. Historically, the countries of ASEAN which lie between the two great cultures of India and China, have been the recipient of successive waves of migrants. All but Thailand are island chains, easily traversed by merchants and migrants alike (Buchanan, 1975:139-57).

Indonesia, the largest member of the group, consists of 13,667 islands of which less than half are inhabited and has a total land area of 1,903.641 Km^2. The main islands are Java (63 percent of total population), Sumatra (18 percent), Kalimantan, Sulawesi and Irian Jaya. The population in mid-1984 was 158.9 million. This made Indonesia the fifth most populous nation in the world. The population growth rate is 2.3 percent. Indonesians are mostly of Malay descent and Bahasa Indonesia is the national language. The majority (90 percent) of the people are Muslims, with Buddhism, Christianity and Hinduism (in Bali only) the minority religions. Being the largest, Indonesia was also the poorest with a per capita GNP of $540 in 1984.

Malaysia, comprising Peninsular Malaysia (131,581 Km^2) and East Malaysia, has a total area of 332,663 Km^2. The East Malaysian states are Sarawak (124,967 Km^2) and Sabah (26.115 Km^2). The population in mid-1984 was 15.3 million, comprising a little more than 50 percent Malays and other indigenous people of which 36 percent were Chinese, 10 percent Indians and 2 percent. The population growth rate is 2.7 percent per annum. Bahasa Malaysia is the national language but English, Chinese and Tamil are also widely used. The Malays practice Islam and the Chinese Buddhism or Confucian-Taoist beliefs. Christianity and Hinduism (mainly by Indians) are also practiced. Malaysia is the only country with common borders with all the ASEAN members.

The Philippines consists of 7017 islands with a total area of 301,080 Km^2. The largest is Luzon (105,708 Km^2) in the north, followed by Mindanao (98,587 Km^2) in the south. The size of the population in mid-1984 stood at 53.4 million. The majority are of Malay descent with a mixture of Chinese and Spanish. The annual population growth rate is 2.8 percent. Tagalog is the national language. Spanish and English are used as well. Filipinas are predominantly Roman Catholics with Protestant (in the north) and Muslims (in the south) being the minorities.

Singapore consists of the island of Singapore and 54 other islands making a total area of 620 Km^2. It is located at the southern tip of Peninsular Malaysia and separated by the Straits of Johore. With a population of 2.5 million in mid-1984 and an annual growth rate of 1.2 percent, 1.8 million (77 percent) of which were Chinese, 350,000 were Malays (15 percent), 170,000 Indians (6 percent) and 50,000 others. The main religions among the Chinese are Buddhism, Taoists or Confucianists. The other religions are Islam, Hinduism and Christianity. Malay (similar to Bahasa Malaysia and Indonesia) is the national language and the administrative language is English. Other languages commonly used are Chinese (mandarin) and Tamil.

Thailand has a total land area of about 542,373 Km^2. It is bordered by Burma to the West, Laos to the North, Kampuchea to the East and Malaysia to the south. Thailand is the only country without a colonial heritage. Its population of about 50 million (mid 1984) consisted of 75 percent Thais, 14 percent Chinese, 3 percent Malays and the rest Khmers, Laotians, Indians and northern tribes. The annual population growth rate is 2.6 percent. It is predominantly a Buddhist nation (95.5 percent). The minority religions are Islam (4 percent), Christianity, Confucianism and others. Thai is the national language but Chinese and English are used as well.

On the system of government, the liberal form of democracy based on the Western model does not characterizes the ASEAN states of today (Ho Kwon Ping, 1982). Though the formal institutions of government resemble Western structure largely because of colonial legacies, the actual style of government reflects deeper local and social traditions. The political system ranges from paternalism to outright military rule. Indonesia and Thailand are run by generals or ex-generals, and the Philippines under the Aquino government has returned to some semblance of western type democracy. Singapore is effectively a one-party state with the interfaces between the bureaucracy and the ruling party barely indistinguishable. Malaysia is run by a coalition of political parties each exercising paternalistic control over its own racial community and resolving problems at the top.

Macroeconomic Performance of the ASEAN Economies

Over the past two decades since 1965, the ASEAN economies have been able to sustain the high rates of economic growth during a period when the world economy, particularly the 1970s, was beset by the two oil shocks (of 1974 and 1979) and subsequent international financial disorders. The ASEAN countries have also been impressive in the resilience of their economies during the world recession of the 1980s when most developing countries suffered declines in output and per capita incomes. The strength of the ASEAN economies was due, in part, to the availability of natural resources in all ASEAN countries (except Singapore) and to the export-oriented industrialization strategy of all five countries.

The production growth of the ASEAN countries is presented in Table 4.3. Except for the Philippines, the GDP growth rates for all ASEAN countries have been above 6 percent over the period

Table 4.3 GROWTH OF PRODUCTION: ASEAN COUNTRIES AND OTHER COUNTRY GROUPINGS

	Real average Annual Growth Rate (%)									
	GDP		Agriculture		Industry		(Manufacturing)		Services	
	1965-73	1973-84	1965-73	1973-84	1965-73	1973-84	1965-73	1973-84	1965-73	1973-84
Indonesia	8.1	6.8	4.8	3.7	13.4	8.3	9.0	14.9	9.6	8.6
Malaysia	6.7	7.3	...	4.2	...	8.7	...	8.7	...	8.1
Philippines	5.4	4.8	4.1	4.0	7.4	5.3	8.5	4.3	4.8	4.8
Singapore	13.0	8.2	5.7	1.4	17.6	8.6	19.5	7.6	11.5	8.1
Thailand	7.8	6.8	5.2	3.7	9.0	8.7	11.4	10.0	9.1	7.5
Low Income Countries	5.6	5.3	3.0	3.6	8.9	7.4	...	...	6.8	5.0
Lower Middle Income Countries	6.8	4.2	3.6	2.4	10.4	4.2	8.5	5.9	6.9	5.1
Upper Middle Income Countries	7.7	4.5	3.5	3.0	8.6	4.6	9.5	5.3	8.2	5.1
High Income Countries	9.0	4.5	...	6.8	...	- .2	...	7.6	...	10.8
Industrial Market Economies	4.7	2.4	1.8	1.1	5.1	1.8	5.3	2.1	4.8	2.1

Source: World Bank 1986

1973-1984, led by Singapore. On a sectoral basis, the agriculture sector has been the slowest growing and industry, led by manufacturing, with few exceptions, has achieved the highest growth rate. As a result of these differential sectoral growth rates, the production share of the agriculture sector has declined substantially in contrast to the significant increases in industry (Table 4.2). In 1984, agriculture accounted for about a quarter of total GDP (Indonesia and the Philippines) or less (Malaysia and Thailand). A feature of development characterized by the ASEAN countries was that developing economies eventually cross the threshold at which manufacturing output exceeds that of agriculture. Other than Singapore, the Philippines and Malaysia have already reached this point while Thailand was almost at this point by 1984.

Concomitant with the structure of production, the share of labor has declined in agriculture in all ASEAN countries. In industry and services (except for Singapore), the share of total employment has increased (Table 4.4).

Agriculture

Comparative basic agricultural statistics among ASEAN economies are presented in Table 4.5. There were striking contrasts in some indices between Indonesia on the one hand and the others. Indonesia also experienced greater pressure on its land resource. This can be seen from the lower arable land and permanent crops available relative to agricultural population.

Table 4.4 LABOR FORCE: ASEAN COUNTRIES (in percent)

Sector	Indonesia	Malaysia	Philippines	Singapore	Thailand
Agriculture					
1965	71	59	58	5	82
1980	57	42	52	2	70
Industry					
1965	9	13	16	27	5
1980	13	19	16	38	10
Services					
1965	20	28	26	68	13
1980	23	39	33	61	20
Average annual growth of labor (%)					
1965-73	1.9	2.9	2.1	3.4	2.4
1973-84	2.3	3.2	3.1	2.2	3.0

Source: World Bank 1986

Table 4.5 COMPARATIVE STATISTICS ON ASEAN AGRICULTURE

	Indonesia	Malaysia	Philippines	Thailand
Basic Indicators				
Population (millions) in mid-1984	158.9	15.3	53.4	50.0
Area (thousands of Km^2)	1919	330	300	514
Agricultural area as % of total area<a>	10.8	13.2	39.6	37.1
Arable land and permanent crops/ag. pop.	.224	.649	.513	.519
GNP per capita 1984	540	1980	660	860
Average inflation rate 1973-1984	17.4	6.2	12.9	8.2
Population growth rate	2.3	2.4	2.7	2.2
Growth Rates				
GDP 1973-1984	6.8	7.3	4.8	6.8
Agriculture	3.7	4.2	4.0	3.7
Industry	8.3	8.7	5.3	8.7
Services	8.6	8.1	4.8	7.5
Distribution of GDP 1984 (%)				
Agriculture	26	21	25	20
Industry	40	35	34	28
(Manufacturing)	13(1983)	19	25	19
Services	34	44	41	52
Agriculture				
Production of All Commodities	149	129	130	136
Food Commodities	150	137	128	135
Cereals Production (1974-76 = 100)	162	70	137	130
per capita food production	126	111	102	110
per capita cereals production	136	57	109	106
Cereals: average annual growth rate 1974-84	5.7	-1.0	3.3	3.4
1981-84	4.2	-6.0	1.4	4.1
Mineral fertilizer use (per ha. of arable land)				
kg/ha 1982	75.0	102.1	28.8	18.3
average annual growth rate				
1972-82	13.0	9.0	2.4	6.4
1979-82	19.2	-1.0	-5.7	1.4
Proportion of labor force in agriculture, 1983	56	45	44	74
Irrigation land as % of arable and permanent crops 1982	27.8	9.0	11.6	17.6
Poverty Indicators				
Daily per capita calorie supply (1980-82)	2376	2569	2405	2312
As % of daily requirements (%)	110	115	106	104

Source: World Bank, 1986

FAO: Selected Indicators of Food and Agricultural Development in Asia/Pacific Region, 1974-1984

Note: <a> Excludes permanent meadows and pastures, forest and woodland and others.

Despite the fact that the production shares of agriculture among ASEAN countries have declined due to the lower growth rate, the sector still remains as one of the major sectors in the respective ASEAN economies in terms of employment, output and share of external trade. The share of labor employed in agriculture for 1983 exceeded 40 percent in all ASEAN economies except for Singapore (FAO, 1984). In 1980, with the exception of the Philippines and Singapore, the production share of agricultural output exceeded the manufacturing sector in Indonesia, Malaysia and Thailand (Table 4.2). In terms of percentage share of merchandise exports in 1983, agricultural exports constituted 62 percent in Thailand, 43 percent in Malaysia, 36 percent in the Philippines and a lowly 12 percent in Indonesia which was due mainly to the importance of petroleum products (World Bank, 1986).

The aggregate indices of the respective ASEAN economies, while useful in illustrating the relative growth of agricultural and food production, do not adequately explain the complexity of developments amongst the individual commodities.

The indices for "all commodities" and "food" show a general rising trend for Indonesia, Malaysia, Philippines and Thailand with Indonesia outperforming the others (Table 4.6). These countries show an increasing trend for cereals with Indonesia outperforming the rest. Average annual growth rates over the 1974-1984 period were 5.7 percent for Indonesia, 3.3 (Table 4.6)

Table 4.6 INDEX NUMBERS OF AGRICULTURAL PRODUCTION, 1974-1984 (1974-1976=100)

	1974	75	76	77	78	79	80	81	82	83	1984
INDONESIA											
All Commodities	98	101	101	105	113	117	127	136	135	142	149
Food	99	100	101	106	113	117	128	137	137	144	150
Cereals	100	99	102	103	116	117	132	145	144	157	262
Per capita Food Production	102	100	98	101	106	107	115	120	118	122	126
Per capita Cereals Production	102	99	99	99	109	107	119	128	125	134	136
MALAYSIA											
All Commodities	97	98	104	106	103	116	117	124	129	124	129
Food	97	99	104	107	103	118	121	131	136	130	137
Cereals	104	98	97	96	72	103	86	106	81	77	70
Per capita Food Production	99	99	101	102	96	108	107	114	116	107	111
Per capita Cereals Production	107	98	95	91	67	94	77	92	69	64	57
PHILIPPINES											
All Commodities	90	102	108	112	120	123	127	132	132	133	130
Food	91	101	108	112	120	123	126	132	130	132	128
Cereals	92	101	107	114	119	131	129	135	130	133	137
Per capita Food Production	93	101	106	106	111	111	111	113	109	108	102
Per capita Cereals Production	94	101	104	109	110	118	113	116	109	109	109
SINGAPORE											
All Commodities	108	104	88	121	101	84	76	104	64	61	99
Food	108	104	88	121	100	84	76	104	65	62	100
Per capita Food Production	110	104	87	118	96	79	71	96	59	56	89
THAILAND											
All Commodities	94	102	105	103	117	114	117	125	126	132	136
Food	93	102	105	102	116	113	115	124	124	131	135
Cereals	92	106	102	89	117	106	116	121	112	125	130
Per capita Food Production	95	102	103	98	108	103	103	108	106	109	110
Per capita Cereals Production	95	106	100	85	109	97	103	105	96	105	106

Source: Statistical Yearbook for Asia & The Pacific ESCAP, Bangkok, Thailand, various issues percent for the Philippines and 3.4 percent for Thailand (ESCAP, 1985). The decline for Malaysia in cereals production has been particularly severe. Over the same period, there was a negative annual rate of 1 percent whereas over the more recent period 1981-1984, it declined by 6 percent. On a per capita basis, the decline was even more alarming. Since one of the most important factors which contributed to the remarkable gains in agricultural productivity was the rapid increase in fertilizer use, it is particularly worrisome to note, recent reductions in fertilizer use. With the exception of the Philippines, the annual average growth rate of mineral fertilizer use at least 6 percent over the period 1972-82. The highest absolute use was in Malaysia and the lowest in Thailand. Malaysia and the Philippines reduced fertilizer use over the recent period 1979-1982. It is imperative that to increase agriculture productivity, ASEAN countries should promote a greater use of fertilizers.

The secular downtrend in agricultural output growth, when disaggregated by major activities within the sector, suggests that the performance between countries and across sub-sectors has been markedly uneven. In rice paddy production, the ASEAN countries recorded an average annual production growth rate of 4.3 percent over the period 1974-1984 (FAO, 1985). Although the performance for the region was encouraging, it has not been uniform. Indonesia registered a high production growth of almost 6 percent over the period, followed by fairly satisfactory growth rates of between 3 to 4 percent for the Philippines and Thailand.

Malaysia suffered a decline in production (Table 4.7). The Table also shows that Thailand's output performance in maize and cassava has been impressive. Malaysia's high growth in maize can be discounted because of the small initial base. Thailand similarly achieved relatively high rates of growth in the other cash crops such as natural rubber, oil palm, coconut and sugar cane. All the four ASEAN countries achieved significant high rates of growth in oil palm. Indonesia in recent years, increased its natural rubber output growth by 7.7 percent.

Looking at the Malaysian situation in more detail, it was noted that total output (GDP) rose by 9 percent per annum in real terms during much of the 1960s. Agriculture contributed significantly to this high economic performance and its output grew at slightly more than 7 percent per annum. However, while total output continued to grow in the 1970s at annual rates of between 7 to 9 percent, agricultural output increases have slowed to less than 5 percent in recent years. Agriculture's contribution to total output was still significant at about a quarter of total GDP and more than 40 percent of earnings from merchandise exports but the sector contributed to slower growth of the economy. If this trend were to persist, the performance of the economy will be much affected in later years (Bank Negara Malaysia, 1986).

While the agriculture output growth for Malaysia over the period 1973-1984 was a modest 4.2 percent, closer scrutiny of the subsectors revealed an uneven performance. This modest growth was achieved by the large increases in palm oil production (Table

4.7). The slowdown in agricultural growth was due to declines in the traditional crops--rubber, paddy and coconuts. These crops

Table 4.7 ASEAN:GROWTH IN SELECTED AGRICULTURAL OUTPUT

	Average Annual Growth Rate (%)			
	Indonesia	Malaysia	Philippines	Thailand
Rice				
1974-84	5.9	-1.0	3.7	3.1
1981-84	4.6	-6.3	1.2	3.3
Maize				
1974-84	4.7	-3.6	2.6	4.9
1981-84	1.0	46.7	1.9	7.5
Total Cereals				
1974-84	5.7	-1.0	3.3	3.4
1981-84	4.2	-6.0	1.4	4.1
Cassava				
1974-84	.6	.1	12.2	11.8
1981-84	.9	.7	-3.5	4.3
Sweet Potatoes				
1974-84	-2.7	-4.4	.9	.6
1981-84	1.4	-5.5	-1.7	.6
Total Roots & Tubers				
1974-84	- .2	- .3	6.8	11.4
1981-84	1.0	- .7	-2.4	4.2
Natural Rubber				
1974-84	1.0	- .3	7.5	5.3
1981-84	7.7	0.0	- .8	4.3
Oil Palm				
1974-84	11.0	14.1	9.9	56.0
1981-84	9.9	7.0	40.0	36.2
coconut				
1974-84	1.7	.2	- .7	3.3
1981-84	-4.1	.4	-10.8	6.8
Sugar Cane				
1974-84	7.0	2.6	- .8	5.1
1981-84	3.0	10.2	- .1	4.8

Source: FAO: Selected Indicators of Food and Agriculture Development in Asia and Pacific Region, 1974-1984, FAO Bangkok, 1985.

account for about 70 percent of the value added in the sector. In fact if oil palm (with 20 percent of value added in 1978-1984) was excluded, the overall agriculture production index would be reduced considerably.

Industries[3]

Industrial development since the end of World War II, has been adopted by the ASEAN economies as a principal strategy to diversify their economies from an overreliance on primary production (in the case of Singapore, on entrepot trade) and to accelerate economic development. The process of industrialization among the ASEAN countries has generally started off with the familiar sequence of import substitution followed by export promotion. There were, however, significant differences in the industrialization experiences among the group such as the duration of import substitution and policy measures adopted before switching to an export-oriented industrialization strategy.

Bautista (1984) has attributed these differences to variations in the size of domestic markets, resource endowments, historical circumstances and general levels of development. Singapore, with a tiny domestic market, sparse natural resources and a long tradition of entrepot trade, has become the most industrialized. At the other extreme is Indonesia, with a vast domestic market, abundant natural resources and historically strong primary trade specialization. In terms of duration, the Philippines has the longest history in industrialization--having established import substituting industries in the late 1940s. Malaysia, Singapore and Thailand followed a decade later and Indonesia two decades later.

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[3] The term manufacturing and industries are used interchangeably as in most literature. Strictly speaking, industry refers not only to manufacturing, classified in the national accounts as ISIC 3, but also to mining (ISIC 2), utilities (ISIC 4) and construction (ISIC 5).

Over the past two decades, the ASEAN economies with the partial exception of Indonesia, have transformed their economies from one overly dependent on primary commodities to a fairly sophisticated and modern manufacturing sector. Nonetheless, much of these activities are small scale industries.

In the 1960s, manufacturing activities in the ASEAN economies consisted mainly of resource-based processing and production of nondurable consumer goods. Exports of manufactures were minimal.

The increasing emphasis on industrialization has been attributed to many factors (Ariff and Hill, 1985:3). Firstly, international market prospects for primary products were poor. Secondly, there was a desire to diversify the structure of exports and reduce the heavy reliance on a few commodities. Thirdly, there was the belief that past colonial masters had distorted the structure of the economy. Therefore, economic development was lopsided with undue emphasis given to the agriculture sector, particularly cash crop exports. Industrialization was therefore seen as a means of redressing this imbalance. Fourthly, there was the perceived relationship between industrialization and economic power. Industrialization was seen as a road to economic development. Lastly, industrialization would occur anyway as per capita incomes rise.

The intensity, duration and emphasis of industrial promotion policies differed considerably among the countries. All countries, including Singapore, adopted an import substitution strategy during the initial industrialization process. Singapore, however, after the separation from Malaysia in August 1963, only experienced a very brief period of import substitution. The longest period of import substitution was sustained by the Philippines since it embarked on such a policy from the late 1940s.

Industrialization has usually been initiated in an ad hoc manner, not infrequently in response to a balance of payments crisis. The introduction of foreign exchange and import controls was initially designed for such a purpose in the Philippines, but these controls subsequently became the cornerstone of industrial policy (Power and Sicat, 1971). The importance of protection measures, i.e., tariffs and nontariff barriers, also varied considerably among the five countries. Singapore and to an extent Malaysia have relied on tariffs while the other three--especially Indonesia and the Philippines--resorted to nontariff barriers (Ariff and Hill, 1985:3).

Import substitution policies met with initial success within the confines of the small protected domestic market. After the initial easy phase, the continuation of the import substitution policies did not sustain the rapid growth experienced in its early years. Industrial growth was confined essentially to the growth of the domestic market with little prospect for exports. Most of the industries established were not competitive internationally, due in part to the nature of policy measures instituted. The options available to these countries in order to maintain a rapid industrial growth therefore required either vigorous efforts in export promotion or a secondary round of import substitution in more capital- and skill-intensive activities.

ASEAN policy makers responded by emphasizing the promotion of export oriented industrialization and widening the prospects for import substitution. Several factors attributed to this change in policy orientation (Ariff and Hill, 1985:3). There was general disappointment with the results of import substitution. The encouraging export growth of the east Asian NICs dispelled the notions that developing countries had little prospect of gaining market access in developed countries. The export growth of the NICs was facilitated by a liberal trading environment which prevailed in an international growth economy during the 1960s and early 1970s. International subcontracting was gaining in importance. The relocation of labor intensive stages of production of many products offshore to new low-cost production centers, particularly in the assembly of electrical and electronic components, was an important element in the ASEAN export drive. The slump in commodity prices, most notably petroleum which was of special importance to Indonesia since 1981, increased the need for more non-oil exports.

Philippines. In 1949, controls on imports and foreign exchange were instituted as an ad hoc response to a severe balance of payments problem (Power and Sicat, 1971). Import quotas, tariffs, foreign exchange controls and tax exemptions, which varied between industries, were successively introduced according to the degree of essentiality. The criteria of essentiality introduced a strong bias towards the domestic production of substitutes for final consumer goods, imports of which were considered inessential. But what started as a curb on the consumption of less essential imports soon became a protective device to encourage the production of their substitutes. New and necessary industries were accorded priority.

A period of decontrol and devaluation in the early 1960s did not have much effect on the structure of incentives favoring import substituting industries that mainly produced final consumer goods. By the late 1950s, the exuberant phase of import substitution had been exhausted. Manufacturing value added increased at a real average rate of only 5.7 percent during the period 1957-1969 in contrast to 12.5 percent during 1949-1957. (Bautista, Power and Associates, 1979; Ariff and Hill, 1985). To counter the chronic balance of payments difficulties, a number of initiatives were introduced to induce rapid manufactured export growth. Firstly, the Industrial Incentives Act, which established the Board of Investments in 1967, provided for a wide range of investment incentives. Secondly, the Export Incentives Act 1970, introduced more explicit incentives for exports--especially nontraditional manufactured exports. The new incentives included a wage subsidy, tax credit, compensation and specific taxes and duties on inputs used in the manufacture of products for export. Thirdly, the floating of the peso in February 1970 which was precipitated by a severe payments crisis in 1969 resulted in a large devaluation. The accompanying discriminatory stabilization measures which favored nontraditional exports improved the incentives structure for manufactured exports. Several other measures were adopted in export infrastructural development, including the establishment of an export processing zone and a government trading corporation for bulk handling and financing and efforts at simplifying export documentation and procedures.

There have also been important changes in the system of protection and control. The Philippines tariff codes were reformed and simplified in 1973 by reducing the number of tariff rates to only six (Bautista 1984). Empirical findings indicated the persistance of a strong bias in the incentive structure in favor of consumer goods at the expense of intermediate products and capital goods (Power and Sicat, 1971; Baldwin, 1975 and Tan, 1978). A study of effective protection rates (EPR) by Tan (1978) on tariffs and indirect taxes in 1974 found the weighted average effective rates for manufacturing industries to be 125 percent compared to only 8 percent for the primary sectors (agriculture, forestry and mining). Export-oriented sectors (those exporting more than 10 percent of output) have an effective rate of minus 16 percent.

The implementation of these incentives provided the stimulus for the acceleration of manufacturing growth. Value-added in manufacturing grew more rapidly in the early 1970s than in other periods after 1957 (Bautista, 1984:182). However, between 1973 and 1975, manufacturing growth declined abruptly to 3.1 percent reflecting the influence of the oil crisis of 1973-74 and world recession during 1974-75. But value added in manufacturing quickly recovered to 5.7 percent and 7.5 percent respectively in 1976 and 1977. The changing composition of manufacturing value added in the 1950s and 1960s reflected the bias towards import substitution policies. Industries such as textiles, paper products, plastic products, electric appliances and transport equipment expanded relatively rapidly. These were mainly import replacing consumer goods. In the 1970s, rising exports of clothing and footwear, electronic products, automotive parts and chemicals enabled the industries producing such products to increase their share of manufacturing value added.

Recent efforts at restructuring the Philippine economy were aimed primarily at improving the manufacturing capability in order to provide a broader and more competitive export base and to promote the development of an efficient intermediate goods industry. To achieve this, the government adopted major policy changes relating to tariffs and import licensing, export promotion, investment incentives and administration, industrial revitalization, and implementation of major industrial projects (ESCAP, 1983).

As a result of a comprehensive review of the tariff system in 1979-1980, tariff changes reduced the overall level of effective protection and made the rates more uniform across industries. The Tariff Commission estimated that the average nominal protection for the manufacturing sector was reduced from 43 percent to 28 percent, and consumer goods industries declined the most from 77 percent to 39 percent over the five year period ending in 1985.

Improvements in export incentives and promotional measures were instituted in 1979 and early 1980 through the strengthening and broadening of fiscal incentives for export production and trading, improvement of export financing facilities, simplification of import and export procedures, and liberalization of bond manufacturing warehouse arrangements. A review of the overall system of investment incentives was undertaken with a view to reduce distortions in resource use. A significant step towards promoting competition was the phasing out of overcrowded industries. Trade liberalization and investment incentive rationalization were being accompanied by a revitalization program designed to assist existing industries to produce at a lower cost and improve their competitiveness based on positive (e.g., technical assistance and financing) rather than negative (protection) measures.

By 1987, eleven major industries had been identified to aid development by producing vital commodities and intermediate inputs at internationally competitive price, inducing the establishment of downstream labor intensive industries and enhancing the country's technical capabilities. These projects are highly capital-intensive (Bautista, 1984:17).

Malaysia. Initial efforts by Malaysia (then Malaya) to promote industrialization began soon after independence in 1957. A World Bank study recommended import substitution. This recommendation led to the Pioneer Industries Ordinance of 1958, which granted tax holidays, (exemption from the usual 40 percent company income tax), tariff measures to protect the domestic industries from foreign competition, other fiscal incentives and subsidies for infrastructural services such as electricity, water and transport in the industrial zones.

Government agencies were instituted to play key roles in the development of import substitution industries. The Malaysian Industrial Development Finance was created in 1960 to provide medium and long term loans and technical assistance. In 1965, the Federal Industrial Development Authority (FIDA) was established to administer incentives and the Tariff Advisory Board was created in 1963 to set tariffs. In 1970, the Board was subsequently placed in the former and renamed the Malaysian Industrial Development Authority.

During this import substitution phase in the 1960s, import duties were imposed mainly for revenue generation purposes.

Exchange controls were not imposed. Quantitative restrictions were rarely adopted and tariffs remained modest (Ariff and Hill, 1985:16). As a result, manufacturing developed at a fast pace. From 1959 to 1968, the average annual growth rate of real value added in the entire manufacturing sector was 17 percent, while those enjoying pioneer status was more impressive at 58 percent (Lim, 1981).

It soon became clear that import substitution could not sustain a rapid growth of manufacturing output and employment as the domestic market was nearing saturation. In 1968, the Investment Incentives Act was passed. This in effect, superceded the 1958 Ordinance, making important changes in economic incentives and broadening the coverage of firms beyond those enjoying pioneer status. In particular, export oriented industries were accorded specific benefits. These included accelerated depreciation, tax holidays of 2 to 8 years to pioneer status firms, investment tax credits, labor utilization tax relief, and location incentives (Ariff, 1980:282-3). In addition, specific incentives were offered to exporters such as tax deductible export allowances and double deduction of export promotional expenses. Export financing was also provided at concessionary rates of interest. Export infrastructures such as free trade zones (FTZs) and export processing zones (EPZs) were established from 1971 in selected locations to assist export development. Firms operating within these zones are permitted to import material inputs free of duties.

As a consequence of the racial disturbances of May 1969, the Investment Incentives Act and agencies such as FIDA were used as vehicles by the government to achieve the objectives of the New Economic Policy (NEP) which sought to restructure society with increased bumiputera (indigenous) participation in the economy. To achieve the objectives of the NEP, the government also adopted a more active role in the industrialization process through direct participation in new industrial ventures. By 1975, it was apparent that the industrial equity ownership targets of the NEP for bumiputeras were not being achieved as rapidly as it was hoped. In order to accelerate the equity participation objectives, the Industrial Coordination Act was introduced in 1975. Under the Act, all new and existing industrial establishments (except for those employing less than 25 full time workers and shareholding of less than R$250,000)[4] would have to apply for manufacturing licenses. With licensing, the Act empowers the government to ensure that the NEP objectives in industrial equity and employment are achieved.

Export orientation did not end import substitution as a strategy for industrialization. Rather they were pursued in tandem although the former was emphasized.

In 1968, the major industrial sectors in terms of manufacturing value added were food manufacturing (mainly food canning, preservation and processing of vegetable oils), rubber products, wood products and beverages and tobacco. By 1974, due in part to the Investment Incentives Act of 1968, large numbers of export oriented industries were established. These included electrical machinery--mainly in the form of electronics and electrical components--which emerged as a major industrial group in 1974. Although still important, food manufacturing, rubber and wood products, nonmetallic products and printing declined in their percentage contribution to industrial value added during the late 1960s and early 1970s. Most of the firms established for the production of electrical and electronic components and textiles for exports were located in the free trade zones.

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[4] Unit of Malaysian currency. The average exchange rate of the ringgit in 1983 was 2.3213 ringgit to one U.S. dollar.

From as early as the Fourth Malaysia Plan (1981-1985) until the Industrial Master Plan (IMP) (1986-1996), the government has given increasing emphasis to the promotion of resource based industries. Particularly emphasis is focused on the processing of cocoa, palm oil and crude petroleum, the canning of fruits and vegetables and the manufacture of tires and furniture for export and home consumption (UNIDO, 1985:27). A new dimension of Malaysian industrial policy concerns the promotion of heavy industries. To the government, the main issue is not whether Malaysia should embark on heavy industries but rather which of the heavy industries were to be developed (UNIDO, 1985:75). The main objectives of the heavy industries program are to strengthen the linkages and the structure of industrial development. The manufacture of capital goods is explicitly cited as the next phase of import substitution following the exhaustion of substitution opportunities in the consumer goods market. To initiate, plan, implement and manage heavy industrial projects, the government established the Heavy Industries Corporation of Malaysia (HICOM).

At the top of the ambitious industrial goal is the energy program which aims to extract and process the vast reserves of oil and gas on the east coast of Peninsular Malaysia, Sabah and Sarawak. Oil pipeline projects (linking Trengganu's oil fields with Kerteh), methol and ammonia plants (in Telok Kalong), and the LNG plant in Bintulu are also a part of the goal. A petrochemical complex in Trengganu is planned in order to produce upstream industrial chemicals with natural gas as feedstock. Other heavy industries include an integrated steel mill and sponge iron plant and a national car project (Proton). It is hoped that the establishment of these heavy industries would, through linkages, encourage the development of more effective light and medium industries such as plastics, textiles and component manufacturing. In conjunction with the resource-based industries--rubber products, palm oil products, food processing, wood based products--such light and medium industries would further deepen the Malaysian industrial sector.

Finally, the IMP also proposes a wide ranging review of the key elements of the new industrialization strategy. This strategy includes the improvement of the incentives system, expanding exports, upgrading and modernizing small scale industries, industrial dispersal, encouraging research and development activities and strengthening the institutions responsible for the development of the manufacturing sector.

Singapore. The island republic is the smallest yet the most industrialized of all the ASEAN countries. Singapore's industrial policy has essentially been outward-looking. Chia (1980) distinguishes three phases of industrial strategy. The first phase was an early brief import substitution strategy during the period 1960-66. The second phase intensified the use of labor during the second half of the 1960s. Lastly, a high technology, skill intensive phase of export development began in 1970.

The role of import substitution for Singapore was limited from the beginning by its small size. In the early 1960s, it was mainly the prospect of a Malaysian common market which led to the promotion of import substitution. But political separation from Malaysia in August 1965 ended this brief phase. Protective tariffs and quota restrictions instituted were however modest as promotion policies were as important as protection during this period (Ariff and Hill, 1985:15). After the separation, Singapore's industrial strategy rapidly shifted to emphasize export promotion.

In 1959, a system of tax incentives was introduced which essentially provided a five year tax holiday to designated pioneer industries under the Pioneer Industries Ordinance and the Industrial Expansion Incentives Act. These incentives were consolidated under the 1967 Economic Expansion Incentives Act.

The incentives were modified and new ones introduced under several subsequent amendments (Chia, 1980:247).

The institutional framework to support industrial investment was also overhauled in 1968. The Economic Development Board was established as a one stop agency for investment promotion and evaluation. Other institutions were created to undertake industrial financing and infrastructural development. Parallel to the fiscal incentives and industrial facilities provided, efforts were made to stabilize wages and to improve industrial relations and discipline. As a result, there was a rapid increase in multinational investments especially in textiles, garments, electronics and ship-repairing.

Since the political separation from Malaysia, the economic planners realized that the future of Singapore was in the international market place. Hence the strategy has essentially been export oriented. The success of this strategy, in the latter part of the 1960s and early 1970s, hinged on the attraction of multinational corporate investments to overcome problems of market access, technology, management and entrepreneurial expertise. Singapore's early liberal foreign investment policy was evident from the availability of various incentives and absence of restrictions governing the entry and operation of foreign enterprises.

The industrial sector underwent rapid growth in the 1960s and 1970s. Production expanded at an annual rate of 12 percent during each of the two decades. Its contribution to GDP increased from 12.8 percent in 1960 to 20.5 percent in 1970 to 24.1 percent in 1980 (Bautista, 1984:7). Largely due to the success of export industrialization and limited domestic labor supply, Singapore became increasingly dependent on foreign labor. The growing labor shortages and rising wage levels, evident since 1970, placed increasing emphasis on industries requiring higher levels of skill, capital and technology. The development strategy of the 1970s emphasized further diversification of the economy. Industries given promotional priority included metal engineering and machinery, aerospace engineering, shipbuilding and transportation equipment, optical instruments and lenses, scientific and medical equipment, electrical and electronic products, petrochemicals, plastic materials and fibers, high quality textile and fashion items, specialty food and confectionery products, recreational good and educational aids, computer software and professional services. The development of the services sector, namely tourism, transport and communication and financial services were equally emphasized. On human development, high priority was accorded to the upgrading of labor skills, both by public institutions as well as private corporations. New tax incentives were introduced and designed primarily to stimulate research and development. The promotion of higher valued industries stalled momentarily in the mid 1970s due to the recession in the international economy.

In 1979, the government adopted three sets of measures heralding, what was termed, the "Second Industrial Revolution"

(Pang, 1982). Firstly, a wage correction policy was introduced in an effort to restore wages to market levels. It was felt that the 1972 National Wage Council guidelines on wage increases had been relatively modest and this had effectively suppressed wage rates, encouraged labor shortages, and slowed productivity growth. Large wage increases averaging 20 percent annually over the three-year period from 1979 to 1981 were recommended and designed to force firms to improve labor efficiency. It was also announced that future wage rises will be closely tied to increases in productivity. Secondly, new incentive measures were introduced to stimulate research and development (R & D) activities and technology transfer. The new tax incentives included double deduction of R & D expenditures from income tax, accelerated depreciation over three years for all plant and machinery for R & D, and an investment allowance of up to 50 percent of capital investment in R & D. Furthermore, loan financing at below market interest rates was provided by the Development Bank of Singapore. At the same time, incentives were reorientated towards the promotion of a limited number of highly skilled and capital intensive industries to produce technologically sophisticated products (Bautista, 1984:16). Tariff protection was removed from some industries catering mainly to the domestic market--e.g., automotive assembly and other industries producing consumer durables such as air-conditioners, refrigeration and televisions. The aim was to improve efficiency in the competitive industries and to phase out industries which were likely to remain noncompetitive internationally.

The final component of Singapore's restructuring strategy was the expansion of technical and educational facilities for both prospective and already employed industrial workers. A skills development fund was established in 1979 with financing from levies imposed on employers and which disbursed grants to support approved training schemes undertaken by private firms (Ariff and Hill, 1985:20).

Thailand. During the period 1946-1953, multiple exchange rates, import quotas and other controls were imposed. A single exchange rate was restored in 1954 and other restrictions were gradually removed. A number of government enterprises were established in the 1950s, many of which required protection (such as cement, paper, sugar, tobacco, gunny bags, forestry products and a variety of consumer goods). The government enterprises were relatively large scale in nature. Private manufacturing activities were, however, mostly small-scaled and confined to rice-milling, saw-milling, apparels and household handicrafts (Tambunlertchai, 1980). Because of widespread mismanagement, a World Bank mission in 1957 recommended that the government should reduce its scope of industrial participation and confine its role to the provision of infrastructure to encourage private investment.

Thailand began its modern industrialization in 1959 with the establishment of a Board of Investment (BOI). Various incentives were given under an investment promotion law. These incentives were extended to industrial activities producing mostly import-competing products and made intensive use of domestic material inputs and labor. The government guaranteed not to nationalize private enterprises and not to engage in similar activities. Imports of intermediate products and capital goods used in these industries were exempted from import duties. Tax holidays were also given during the initial stages of the investment.

In the 1960s, which encompassed the First (1961-1966) and the Second Development Plan (1967-1971), the investment promotion laws attached considerable importance to import substitution industries. The investment promotion law has been revised several times since 1960. The Investment Promotion Act of 1962 which was used with few revisions until 1972 gave a higher priority to large-scale production. The Act classified activities eligible for promotion into groups A, B and C according to their relative importance to the economy. Group A activities were fully exempted from import duties and import taxes on raw materials and other intermediate products. Group B activities were granted reduction of duties and taxes by one half, and those in group C by one third. Activities under category A were mostly capital intensive industries such as metal smelting, machinery, tires, chemicals, and electrical products. Activities under group B were comprised mostly the assembly type of activities. These included industries such as automobile, electrical appliances and agricultural machinery. Group C activities included some eighty industries ranging from agriculture processing, textile and rolling mills to hotel and international air transportation.

The Second Development Plan (1967-1971) gave more emphasis to the employment and linkage effects. From 1967, all industrial activities applying for promotional status were considered as group C industries with one third exemption from import duties and taxes. This effectively did away with the earlier distinction among promoted industries. Tariffs have always been moderate, rarely prohibitive and largely for revenue purposes. They have generally been slightly higher than in Malaysia and significantly lower than in the Philippines (Ariff and Hill, 1985:16).

Notwithstanding the rapid growth of the Thai manufacturing sector in the initial phase of import substitution during the 1960s, it soon became apparent that further growth was limited by the size of the domestic market. Not surprisingly, the Third Development Plan (1972-1976) stressed the need for a reorientation of Thai industries. The importance of manufactured exports and a more balanced regional industrial distribution were emphasized in the Third Plan. In 1972, the Export Promotion Act was introduced. This exempted exporters from the business tax and from taxes on imported inputs and provided other fiscal incentives provided. An Export Promotion Committee was established to coordinate export promotion efforts. Industries located in provinces designated by the BOI were also given special incentives. A 1977 revision enhanced the power of the BOI and gave more incentives to investors. This action was in response to the government's concern of the decrease in foreign investments during the 1975-1976 period.

A major revision of Thailand's tax structure was implemented in 1974 with significant reductions in the tariff rates on "necessary" consumer goods, raw materials, intermediate products, machinery and appliances. Nonetheless, import substitution policies such as tariff protection persisted through the decade even as manufactured exports were actively being promoted. Average effective rates of protection were particularly high for consumer goods, both durable and nondurable. These rates have increased significantly from 1974 to 1978 (Akrasanee, 1980:315-38). Changes in the business tax structure--mainly reductions for domestically produced goods--resulted in additional protection (Ariff and Hill, 1985:22). These changes reflected the commitment of the government to protect import substituting industries even when manufactured exports were promoted.

Thailand did not establish export processing zones (EPZs) until 1980--much later than other ASEAN countries. These EPZs were enclaves with duty free access to imported inputs and machinery. Establishments in EPZs also enjoy a variety of investment and export incentives.

Industrial policy of the Fifth Development Plan (1982-1986) reduced protection to domestic industry, encouraged manufactured exports and promoted regional dispersal of industries. Investment incentives were further improved. Infrastructural facilities were expanded by the establishment of five EPZs in addition to the four existing (Bautista, 1984:18). Some of the policy measures recently adopted were consistent with the objective of reducing existing biases against manufactured exports. Steps were also taken for a comprehensive tariff revision as the levels of protection had been raised since the mid 1970s due, apparently, to government efforts to stimulate domestic investment.

A recent phenomenon of Thailand's industrialization program, not unlike her ASEAN neighbors, is the promotion of basic industries. The development of basic industries such as iron and steel, fertilizers, soda ash and newsprint have come about with the discovery of natural gas. The establishment of basic industries represents the next stage of Thai industrialization process (Akrasanee, 1980). It appears therefore that Thailand, like her ASEAN neighbors, will be moving significantly towards import substitution in intermediate products in the 1980s in addition to continuing with an export-oriented industrialization policy.

Indonesia. Indonesia's industrialization experience contrasts sharply from that of her neighbors. Indonesia is the least industrialized among the ASEAN countries. During the early years after independence, the dominant political ideologies were strongly nationalistic and foreign investment were not encouraged (Sadli, 1982). Dutch investments were taken over in 1957 and managed as state enterprises. The nationalization program and the economic stagnation of the 1960s accounted in part for the low level of industrial development. During this period, the government promoted state enterprises in cement and fertilizer plants, tire manufacturing and other small-scale modern industrial activities (McCawley, 1979).

During the "old order" of Sukarno (up to 1966), the manufacturing sector grew only 1.9 percent annually during the 1953-1959 period and 2 percent annually during 1960-1965 period. The change in regime in 1967 ("new order" of Suharto) witnessed a change in the investment promotion policies. New regulations for foreign investments were introduced in 1967 and for domestic investments in 1968. A range of policy liberalization was initiated during the late 1960s and early 1970s. The incentives consisted mainly of tax and import duty exemptions or reductions. The amount of incentives given depended on the location and size of investment. Indonesia's industrialization strategy was almost exclusively import substitution in nature until the early 1980s.

Under the Suharto regime, the economy grew rapidly--especially the mining and manufacturing sectors. The average annual GDP increase of 7 to 8 percent during the period 1970-1981 was double the 1960-1969 average growth rate. Even more impressive was the growth of the industrial sector, which registered an average annual rate of 11.2 percent in the 1970s (Wong, 1979:164). Expansion in mining was fueled by extractive exports and manufacturing by the domestic demand for industrial consumer goods. Since manufacturing started from such a small base, there was considerable scope for import substitution. As a result, Indonesia's imports of consumer goods as a proportion of total imports decreased from 42.7 percent in 1966 to 16.1 percent in 1972. Import substitution was the major source of growth during 1971-1975. This substitution was mainly in food processing, wheat flour, textiles, paper and fertilizers (Poot, 1981). On the other hand, domestic demand expansion was the important source of growth in other food products, cigarettes, transport equipment, chemicals and wood products.

The import substitution drive, however, seemed to have slackened subsequently as the share of consumer goods (other than rice, flour and sugar) rose from 9 percent in 1972 to 11 percent in 1977 (Anwar, 1980). Up to the late 1970s, manufactured products comprised less than 5 percent of Indonesia's exports.

Several factors have been forwarded to account for the low rate of growth of Indonesia's manufactured exports. Paauw (1981) observed that most of Indonesia's import substitution manufacturing sectors were so highly over protected that developing export potential was unlikely under such policies. Another factor which inhibited the growth of Indonesia's exports as well as import substituting industries was the boom in commodity prices, often termed the "Dutch Disease Syndrome." Indonesia's nominal exchange rate was fairly stable for much of the 1970s despite significantly higher inflation than that of its trading partners. This resulted in an increasingly over-valued currency which rendered manufactured exports uncompetitive until the rupiah was devalued in late 1978, 1981 and 1986. Besides the extensive industrial protection and regulation, powerful vested interests (monopolies) resisted attempts at policy reform.

In an era of declining petroleum prices in the early 1980s, limited steps were taken at limited export promotion. Recent policy adjustments in the early 1980s have been aimed at reducing dependence on oil exports. Since 1974, the oil boom has raised the share of oil revenue in total exports from 50 percent to 70 percent. Manufactured export expansion was also deemed necessary to maintain a relatively high growth rate. Rapid industrial expansion also contributed substantially to employment generation which is an overriding policy concern in Indonesia.

Some manufactured product categories which have been identified to have export potential are processed wood products (including sawn timber, plywood veneer and moldings), mineral-base products (tin, nickel, alumina and aluminium products), labor intensive products (textiles, batik garments and leather products) and food products (shrimp and tapioca chips).

A recent World Bank study reported that the current difficulties resulting from the world recession and the oil glut may provide an unexpected opportunity to carry through some of the structural adjustments. These adjustments would involve a more liberal trade policy, an improved investment and regulatory environment, and domestic prices adjustments to reflect economic costs. The policy measures recommended include cheaper export credit, insurance, relaxation of some foreign exchange controls and lower port charges.

Like other ASEAN countries, Indonesia has ventured into the heavy industries. These ventures include a $2 billion aluminium smelter project in North Sumatra, a $900 million alumina plant in bauxite-rich Bintang Island and a planned $780 million steel complex. Other large industrial projects to be implemented include aircraft manufacture, a one million ton capacity cement plant, two urea fertilizer plants, a $1.7 billion olefin center and a 90,000 ton newsprint facility.

Structure of Production and Structural Change

The manufacturing sectors of the ASEAN countries vary considerably in size and structure. Manufacturing as a share of GDP in 1984 ranged from 13 percent in Indonesia to 25 percent in Singapore and the Philippines. The common feature among these countries, with the possible exception of the Philippines, was the high rate of industrial growth (in excess of 7 percent) over the last decade (Table 4.3). This section profiles the structural changes, the growth and transformation of manufacturing output in the five countries. The changing structure of ASEAN's manufacturing value added in the 1970s and early 1980s is shown in Table 4.8. The Table also reveals the considerable intra-regional differences in the level of industrialization among sectors.

The subsector "food, beverages and tobacco" (ISIC 3) was the largest or among the largest in ASEAN manufacturing (except in Singapore), but its relative importance has declined. Food

Table 4.8 STRUCTURE OF ASEAN'S MANUFACTURING VALUE-ADDED, AT CURRENT PRICES

ISIC	Industry	Indonesia		Malaysia[a]		Philippines		Singapore			Thailand	
		1975	1980	1970	1980	1975	1980	1970	1980	1983	1970	1980
31	Food, Bev. & Tobacco	33.1	24.6	27.5	23.8	46.8	32.0	7.1	5.0	6.1	38.7	28.6
32	Textile & Textile Products	14.4	10.6	7.6	7.2	8.2	12.3	5.7	5.4	4.8	17.2	19.7
33	Wood & Wood Products	3.1	5.6	8.9	9.7	4.1	5.9	3.1	3.2	2.7	3.7	3.3
34	Paper & Paper Products	2.9	2.3	5.2	5.0	3.4	4.7	4.7	4.5	6.3	3.5	3.5
35	Chemicals	30.5	35.5	21.6	20.4	18.4	21.8	25.3	24.8	23.0	16.7	19.9
36	Non-Metallic Minerals	4.3	5.6	4.3	5.6	3.6	4.5	3.5	2.3	4.0	5.1	6.4
37	Basic Metal Industries	0.9	2.4	3.2	2.5	3.4	3.9	1.8	1.8	1.6	1.8	2.2
38	Metal Manufactured Products	10.7	13.0	21.1	25.3	11.8	14.1	47.7	51.4	50.2	1.1	14.0
39	Other Manufactured Industries	0.2	0.3	.6	.6	.4	.7	1.1	1.6	1.3	2.2	2.6
	TOTAL MANUFACTURING[b]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: UNIDO, Industry and Development:Global Report 1986, Vienna, 1986.

[a] Refers to Peninsular Malaysia only.

[b] Due to rounding of numbers, some columns do not add up to 100.

canning and preservation in various forms were the major export oriented activities. Malaysia and the Philippines have very large vegetable oil processing while sugar refining was important in the Philippines and Thailand.

The "textiles and textile products" industry (ISIC 32) includes the manufacturing activities fiber making, spinning, weaving, dying and finishing, garment making (besides leather), leather, fur products, and footwear. Import substitution was concentrated at the lower stages of fabrication while production for export was at the higher stage products, especially garments and footwear. To penetrate export markets, efforts are currently being focussed on producing higher quality fabrics and wearing apparel. In terms of relative importance, this subsector contributed about a fifth of total manufacturing value added for Thailand while the subsector also contributed significantly for Indonesia and the Philippines.

The "wood and wood products" industry (ISIC 33) in ASEAN countries involves log processing, wood shaving, veneer and plywood manufacturing and furniture making. It was especially important in Malaysia. Production and exports contributed almost 10 percent to total manufacturing value added in 1980. Most countries have restricted, either partially or totally, the export of logs. Currently, Indonesia is promoting the production and export of plywood with success while the Philippines, Thailand (where the supply of logs have been dwindling), and of late, Malaysia, have emphasized the export of wood products such as furniture.

The "paper and paper products" industry (ISIC 34) includes pulp, paper and paperboard products, printing and publishing. Production up to now has been largely in paper products but the trend (except for Singapore) is towards the production of pulp and newsprint. The "chemicals" industry (ISIC 35) in ASEAN covers a wide range of activities. It includes chemicals for medical and industrial uses. Downstream petrochemical production, oil refining, plastic and rubber products have been the more important activities. Downstream petrochemicals and high quality plastic products are growing rapidly in all countries. Oil refining is a major activity in all countries especially Singapore. Singapore's attempts to strengthen its position as a center for processing crude petroleum have been partially offset by the efforts of Indonesia and Malaysia to develop their own refining capacities. Singapore has, however, tried to maintain its position through massive investments in upgrading its refinery capacity to produce lighter and higher value petroleum products. Malaysia, Indonesia and Thailand are major world producers of rubber, and Malaysia, is now diversifying into higher value added-rubber products.

The "nonmetallic mineral products" industry (ISIC 36) includes products in cement, ceramics and sanitary ware. The production of these products is geared largely towards domestic consumption. ASEAN is self-sufficient in cement with some surplus for export. Thailand and Indonesia are the largest producers while Malaysia has greatly increased its capacities to meet anticipated domestic demand. The production of ceramics and sanitary wares has been growing rapidly--mostly for domestic consumption. Iron and steel industries dominate the "basic metals" industry (ISIC 37). There are integrated steel mills in Indonesia, Malaysia, and the Philippines which provide mainly flat and non-flat products for domestic consumption. There are tin smelting facilities in all countries except the Philippines. Other smelting facilities are for cooper in the Philippines, zinc in Thailand and aluminium in Indonesia.

The "metal manufactured products" industry (ISIC 38) produces fabricated metal products, motor vehicles and transport equipment, electrical and electronic products, and machinery. This has been a fast growing and important subsector in most ASEAN countries. It accounted for more than half of the total manufacturing value added in Singapore by 1980. Metal fabrication is growing in all countries. Motor vehicle production is at the assembly stage in all countries except Singapore. Malaysia is producing her own national car. Singapore has instead, concentrated on the production of automotive components and parts. Electrical and electronic component production are at the assembly stage in Thailand and Indonesia. Singapore has already moved into manufacturing proper while Malaysia and the Philippines have similar plans. Machinery produced in the region has largely been used in agriculture and processing of agriculture products.

Conclusion

The ASEAN economies have generally evolved from being wholly reliant on primary production to being increasingly dependent on manufactured exports. The process of industrial development has started off with the familiar sequence of import substitution followed by export oriented industrialization. It was noted that there were significant differences in the industrialization experiences among the five economies in the extent and duration of import substitution and policy measures adopted. Differences were largely associated with the size of domestic markets, resource endowments, history and general levels of development. These differences may, in part, account for the variation in their present level of industrial development.

ASEAN's current industrialization strategy centers on export orientation and the deepening of the industrial structure with import substitution of intermediate inputs. The export-oriented industries include mostly the manufacture of labor intensive goods such as textiles and garments, footwear, leather products, plastic products and assembly of electrical and electronic components. Import substitution is now being attempted in the chemicals, plastic materials, iron and steel industries and in the manufacture of component parts for automobiles. Furthermore, most ASEAN countries are now pursuing resource based industrialization including heavy industries. The underlying motivation seems to be two fold. One is derived from perceptions of natural comparative advantages vis-a-vis foreign suppliers and the other is that the establishment of heavy industries is regarded as critical to the balanced development of the manufacturing sector. This balance includes producing finished goods and providing the basic industrial infrastructure which is perceived to be necessary in the face of increasing uncertainties and protectionism in the international economy. Industries implemented or planned include petrochemicals in Singapore, Indonesia, Malaysia and Thailand; aluminium smelting in Indonesia; zinc and copper smelting in Thailand and the Philippines, respectively; chemical fertilizers in Indonesia, Malaysia and Thailand; integrated wood processing in Indonesia and Malaysia and rubber-based products in Malaysia.

For Singapore, the structural transformation of the mainly entrepot trading economy of the 1960s to one of manufacturing and services has been the basic factor for its success in achieving the highest per capita income in the region. The economy first shifted from entrepot trade to labor intensive domestic manufactures such as food processing, textiles, and garments manufactures. Later capital intensive and higher-value added industries such as petroleum refining, chemicals, machinery and transport equipment were developed. More recently, Singapore has concentrated on developing tradable services, especially tourism, transport and communications, financial and business services and skill intensive high technology industries. The success of Singapore has been attributed to its ability to perceive the emerging opportunities in the international market place and disciplined economic management.

The ASEAN countries are not expected to duplicate the impressive double digit GDP growth of the two previous decades. Since 1985, most ASEAN economies were significantly affected by the slowdown in the world economy and the sharper deceleration in growth in world trade brought about by the concerted action of most countries to reduce imports. The Philippines economy registered the only negative growth rate in 1984. Singapore, which has been one of the fastest growing economies in the region, registered a negative rate of growth in 1985 (ESCAP 1985). Indonesia and Malaysia, the two major exporters of primary commodities experienced sharply reduced growth rates chiefly because of the fall in both oil and non-oil primary commodity prices. Likewise, Thailand suffered the same fate as other primary commodity producers due to the fall in the price of rice, sugar, tin and other commodities as well as to the slower growth in manufactured exports. Malaysia and Singapore in particular, were adversely affected in 1985 by the collapse in the export demand for electronic components. Since the industry constitutes a substantial proportion of total non-fuel manufacturing output in both countries, the fall in their demand has resulted in a substantial decline in the value added of the manufacturing sector in 1985.

As a consequence of the economic slowdown and concern about account balances, most ASEAN countries have reduced or rescheduled large capital intensive projects, reduced imports and placed stricter controls on foreign borrowing. At the same time, most are trying to cope with large fiscal deficits by reducing, through privatization, the public sectors' direct role in the economy.

CHAPTER V
EXTRA- AND INTRA-ASEAN TRADE

Changes in the structure of production as a consequence of industrial strategies are reflected in the external trade patterns of ASEAN countries. In this chapter, these changes are analyzed.

Total Trade

Table 5.1 shows the external trade of ASEAN countries over the period 1975-1985. Except for the last two years of the period, ASEAN's total trade exhibited a rising trend and achieved an annual average growth rate of 11.4 percent. In real terms, except for Indonesia, most of the ASEAN countries' exports grew faster than the world's middle-income economies. The same was true for imports, except for the Philippines, over the period 1973-1984 (The World Bank, 1986).

Composition of Trade

Exports

It was observed in the previous chapter that, except for the extreme case of Singapore due to its entrepot trade, the other members have relatively open economies as indicated by the percentage of exports to gross domestic product (Table 5.1). In fact, their dependence on merchandise exports has increased gradually in recent years. The composition of exports has changed quite drastically (Chee, 1984).

Since the price increases in the early and late 1970s, Indonesia's structure of merchandise exports (Table 5.2) shows a dependence on fuel, particularly crude petroleum. The export share has increased from less than one third in 1970 to more than four-fifths of total exports. The increasing dominance of crude petroleum exports has decreased the relative significance of other categories of exports such as food, agricultural raw materials and ores and minerals. The impressive high growth in the production of manufactured goods (reviewed previous chapter) could be seen in the significant increase in exports but the share was still relatively small. At the SITC 3-digit group level, Indonesia's main exports in 1982 were crude petroleum, natural gas, petroleum products, natural rubber, tin, coffee, wood (rough), veneers and plywood (United Nations, Handbook of International Trade and Development Statistics, 1985).

Malaysia's structure of exports was more diversified than Indonesia's. Table 5.2 shows that the export of agriculture raw materials, which accounted for more than half of Malaysia's total exports in 1970, has declined by one-half to only a little more than a quarter by 1982. The agriculture raw materials

Table 5.1 ASEAN TRADE, 1975-1985 (in million US$)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	Growth % p.a.
Total Trade												
Indonesia	12218	14641	17631	18959	23643	35802	39326	39834	38434	35761	27651	8.5%
Malaysia	7458	9285	10841	13626	19387	24319	23961	25119	28055	30710	27709	14.0%
Philippines	6081	6575	7529	8758	11412	14348	14525	13545	13186	11605	9965	5.1%
Singapore	14270	16909	19573	24008	33178	45489	50678	53273	54894	56645	52677	14.0%
Thailand	5536	6724	8305	9671	12709	15985	17298	15815	16938	17811	16351	11.4%
ASEAN	45562	54134	63879	75021	100329	135944	145787	147585	151416	152532	134353	11.4%
Exports												
Indonesia	7270	8748	11167	11963	16042	24490	25630	22552	21491	21881	18330	9.7%
Malaysia	3889	5400	6226	7630	11408	13370	12228	12502	14624	16653	15408	14.8%
Philippines	2296	2545	3164	3452	4640	5858	5776	5038	4981	5343	4614	7.2%
Singapore	5363	6982	7865	9424	13170	18457	20198	21423	22897	24070	22808	15.6%
Thailand	2278	3072	3588	4147	5365	6595	7148	7051	6442	7413	7120	12.1%
ASEAN	21096	26747	32011	36616	50625	68771	70979	68565	70435	75360	68280	12.5%
Imports												
Indonesia	4948	5893	6464	6996	7601	11312	13696	17282	16852	13880	9321	6.5%
Malaysia	3569	3885	4615	5996	7979	10949	11733	12617	13431	14057	12301	13.2%
Philippines	3785	4030	4365	5306	6776	8490	8749	8507	8205	6262	5351	3.5%
Singapore	8907	9927	11708	14584	20008	27032	30480	31850	31997	32575	29869	12.9%
Thailand	3258	3652	4717	5524	7344	9390	10150	8764	10496	10398	9231	11.0%
ASEAN	24466	27387	31868	38405	49704	67173	74808	79020	80981	77172	66073	10.4%

Source: InternationalMonetaryFund:DirectionofTrade Statistics (IMF:DOTS), various issues

Table 5.2 EXPORT STRUCTURE BY MAIN CATEGORIES AND SELECTED COMMODITY GROUPS BY COUNTRY AND SELECTED YEARS

			By main categories of export								
Country		Total Value	All Food	Ag. raw materials	Fuels	Ores & Minerals	Manufactured	Of Which			Unallocated
								Chem. prod.	Other manu. gds.	Mach. & equip	
	SITC		0+1+22+4	2 less (22+27+28)	3	27+28+67+68	5 to 8 less (67+68)	5	(6+8)-(67+68)	7	
Indonesia	1970	1055.1	19.56	34.78	32.83	11.42	1.15	.51	.30	.34	.26
	75	7130.2	8.06	12.31	74.87	3.53	1.19	.34	.40	.45	.04
	79	15590.1	9.60	18.33	65.20	4.04	2.56	.41	1.41	.74	.26
	80	21908.9	7.65	14.14	71.86	4.01	2.20	.38	1.32	.50	.15
	81	22260.3	5.08	8.22	79.80	3.69	2.95	.29	1.97	.69	.27
	82	22293.3	4.86	5.76	82.41	3.11	3.58	.28	2.50	.80	.27
Malaysia	1970	1686.6	12.64	50.05	7.35	22.81	6.31	.71	3.97	1.63	.85
	75	3846.6	23.21	34.13	10.88	14.02	17.12	.86	10.05	6.21	.65
	79	11075.1	17.16	36.18	18.24	10.80	17.34	.54	6.34	10.46	.28
	80	12939.2	15.05	31.00	24.72	10.32	18.63	.61	6.54	11.48	.29
	81	11733.9	16.87	27.39	26.62	9.13	19.48	.71	6.53	12.24	.51
	82	12026.7	15.94	26.02	28.67	6.35	22.75	.84	6.52	15.38	.28
Philippines	1970	1059.7	44.01	25.78	1.63	22.07	6.38	.51	5.80	.08	.12
	75	2216.0	57.37	9.98	1.69	13.33	11.60	.94	10.13	.53	6.02
	80	5750.9	35.86	6.08	.66	21.42	20.25	1.56	16.54	2.15	15.73
	81	5712.1	34.59	4.75	.74	15.72	22.80	1.86	18.22	2.72	21.40
	82	5012.0	32.78	5.45	.32	12.32	22.86	2.30	17.25	3.31	26.27
	83	4966.7	30.71	5.86	2.20	11.38	24.27	1.88	17.32	5.06	25.57
Singapore	1970	1553.5	16.38	28.18	23.18	2.43	26.71	2.73	13.03	10.95	2.97
	75	5377.1	9.51	12.48	33.64	2.64	39.91	3.73	13.49	22.69	1.82
	80	19375.5	8.11	10.28	25.20	3.56	45.60	7.10	12.16	26.35	7.25
	81	20968.0	7.32	7.37	27.31	3.46	46.84	8.22	12.48	26.14	7.69
	82	20787.9	7.73	5.58	27.54	3.82	46.90	9.21	12.18	25.52	8.43
	83	21832.5	6.38	6.18	28.01	3.58	48.19	4.34	12.55	31.30	7.65
	84	24055.0	9.19	5.70	25.62	3.07	49.35	4.94	12.14	32.27	7.08
Thailand	1970	685.2	52.31	24.74	.31	14.90	4.43	.24	4.08	.11	3.31
	75	2162.2	62.75	12.34	.57	7.66	14.44	.55	12.57	1.32	2.23
	79	5207.1	49.12	13.76	.03	12.02	22.55	.69	18.11	3.75	2.53
	80	6369.1	47.02	11.24	.07	14.38	24.40	.74	17.81	5.85	2.89
	81	6848.8	55.51	8.98	.02	8.65	25.07	.80	19.10	5.15	1.77
	82	6796.6	57.45	7.99	.03	7.20	25.97	.83	19.83	5.30	1.35

Ref: UNCTAD: Handbook of International Trade Devt. Statistics, 1985 Supplement, New York, 1985.

Table 5.2--continued

Country		Cereals	Crude & Manu. Fert.	Crude petroleum	Petroleum products	Medical & pharmaceutical	Textile fibers Yard & clothing	Metals & Metal Manu.	Machinery		Transport equipment
									Non-electrical	Electrical	
SITC		04	271+56	331	332	54	26+65 +84	67+68 +69	71	72	73
Indonesia	1970	.28	.00	29.24	3.59	.26	.20	.82	.34	.00	.00
	75	.12	.00	69.33	5.54	.17	.06	1.23	.21	.18	.06
	79	.03	.24	52.11	4.79	.04	.76	2.78	.09	.56	.10
	80	.05	.16	53.27	5.42	.05	.66	2.06	.02	.44	.04
	81	.04	.02	59.22	5.44	.04	.59	2.19	.07	.35	.28
	82	.02	.05	66.48	2.86	.05	.72	1.89	.08	.53	.20
Malaysia	1970	.08	.04	3.92	3.38	.20	.69	19.98	0.72	.28	.63
	75	0.14	.05	9.33	1.55	.19	2.02	13.66	2.20	3.29	.72
	79	.11	.00	17.40	.75	.08	2.23	10.10	.80	9.15	.51
	80	.11	.01	23.83	.82	.09	2.87	9.47	.78	9.90	.79
	81	.14	.02	25.54	1.03	.11	2.80	8.52	1.02	10.91	.31
	82	.37	.03	27.38	1.21	.12	2.84	5.91	1.43	13.24	.71
Philippines	1970	.05	.03	.00	1.60	.13	2.16	1.24	.06	.00	.01
	75	.04	.00	.00	1.69	.10	3.22	1.82	.31	.10	.12
	80	1.38	.01	.00	.64	.11	6.71	3.64	.21	1.34	.59
	81	.62	.01	.00	.55	.11	7.74	2.74	.16	1.90	.66
	82	.11	.01	.00	.30	.14	7.75	1.99	.44	2.43	.43
	83	.29	.01	.00	2.18	.14	7.79	2.64	.20	4.37	.49
Singapore	1970	1.14	.36	.01	23.08	.47	5.62	2.40	3.99	4.00	2.97
	75	.98	.56	.41	32.89	1.36	4.85	3.17	6.97	11.54	4.18
	80	.86	.49	.04	24.82	.78	4.27	3.79	5.97	16.11	4.27
	81	1.01	.44	.01	26.81	.72	4.01	4.08	6.53	15.24	4.37
	82	1.37	.46	.34	26.80	.77	3.98	4.38	7.59	14.62	3.30
	83	.60	.32	.44	27.12	.71	4.05	3.68	9.31	16.96	5.03
	84	1.64	.32	.28	24.96	.51	3.94	3.24	10.70	17.96	3.61
Thailand	1970	32.39	.00	.00	.30	.08	7.50	11.84	.05	.06	.01
	75	27.65	.00	.00	.56	.23	8.13	6.03	.18	1.08	.06
	79	20.82	.00	.01	.02	.26	11.36	10.40	.31	3.22	.22
	80	21.43	.00	.00	.06	.26	10.04	12.09	.43	5.20	.22
	81	24.41	.00	.00	.01	.19	10.56	7.53	.39	4.58	.18
	82	20.87	.00	.00	.02	.16	11.24	6.40	.44	4.68	.19

comprised mainly of rubber, sawn timber and logs. The export of food has been maintained at more than 15 percent, but the exports of palm oil and related products have dominated this category with 10.8 percent of total exports in 1982. Fuel was the main export category at 28.9 percent of total exports. Agricultural raw materials previously dominated. Malaysia's fuel exports were mostly crude petroleum. One of the most significant changes in the composition of Malaysian exports has been manufactured products. The export of manufactured goods has increased especially over the past decade, to become one of the major exports with a share of 23 percent in 1982. Malaysia's main exports at the SITC 3-digit group level in 1983 were crude petroleum, wood (rough), electrical machinery, fixed vegetable oil, rubber, tin, wood (shaped), clothing, veneer plywood and petroleum products (United Nations, Handbook of International Trade and Development Statistics, 1985).

Philippines' structure of exports in Table 5.2 shows a high but declining share in food exports. From a high of 57 percent in 1975, the export share has declined to 31 percent in 1982. Major items under food included sugar, fixed vegetable oils (mainly coconut oil and products) and fruits. Philippine exports of manufactured goods have, since 1980, attained at least a fifth of total exports. The major manufactured exports were electrical and electronic equipment and components and clothing. The exports of ores and minerals (copper, silver and platinum) have declined from 22 percent in 1970 to 11 percent in 1983. Next to Thailand, the Philippines has the highest export share in textiles, fibers, yarn and clothing. In terms of the export structure at the SITC 3-digit group level, the main export groups in 1982 were special transactions, sugar and honey, fixed vegetable oils, nonferrous base metals, clothing, fresh fruits, silver and platinum ores, fruit preserved, wood (shaped) and electrical machinery (United Nations, Handbook of International Trade and Development Statistics, 1985).

Being the most industrialized among the ASEAN economies, Singapore has the highest export share in manufactured goods. In recent years, agriculture raw materials such as rubber were still prominent in entrepot trade, but the importance of these commodities has declined. On the other hand, the shares of manufactured goods (machinery and equipment) and mineral fuel re-exports have increased significantly. This reflected the changing nature of entrepot trade. As a result of Singapore's successful industrialization program, domestic exports have consisted not only of labor-intensive manufactures such as clothing but also increasingly of capital goods like machinery (especially electrical machinery and appliances) and transport equipment including ships, boats, oil rigs and aircraft (Wong, 1984). In 1970, the export of food and agriculture raw materials comprised more than 45 percent of total gross exports (Table 5.2), but in 1984, their combined export share had declined to only 15 percent. Singapore's export at the SITC 3-digit group level in 1982 were petroleum products, special transactions, electrical machinery, chemicals, telecommunications equipment, rubber, nonelectrical machinery and clothing (United Nations, Handbook of International Trade and Development Statistics, 1985).

Thailand is a major exporter of food unlike the other ASEAN countries. Over the years, Thailand has remained a major exporter, but the composition of trade has changed somewhat. Food exports, since 1970 (Table 5.2), have constituted more than half of total exports. Cereal exports--rice and unmilled maize--have remained at over 20 percent since 1972. Agricultural raw materials have declined from 25 percent in 1970 to 8 percent in 1982. A very significant change in the composition of exports was the rapid increase in the export share of manufactured goods. From a meager 4 percent in 1970, manufactured exports increased to more than a quarter of total gross exports. Of these in 1982, textile products (11 percent), metal and metal manufactures (6 percent) and electrical machinery (5 percent) have been the main exports. In terms of the SITC 3-digit group level, the main exports in 1984 were rice, fresh vegetables, sugar, rubber, clothing, maize, tin, electrical-powered machines and switch gears, fresh fish, and pearls, precious and semi-precious stones (United Nations, Handbook of International Trade and Development Statistics, 1985).

Imports

The structure of merchandise imports will be examined from the viewpoint of the oil exporting members (Indonesia and Malaysia), the oil importers (Philippines and Thailand) and the special case of Singapore due to its entrepot trade. The increasing importance of mineral fuel imports may have altered the structure of the oil importing countries, including Singapore. If the imports of ASEAN members are viewed by their economic function, the trend is clear. Consumption goods have declined over the years while investment and intermediate goods have increased. Next to manufactured goods, food was the largest Malaysian import in 1970. The import share has since declined to 12 percent in 1982 (Table 5.3). Indonesian food imports have also exhibited a downtrend. However, large increases in government purchases of such things such as fertilizers, caused noticeable fluctuations in the import structure in the mid-1970s. The import of crude and manufactured fertilizers were 8 percent of total imports in 1975.

Another important change in the import structure occurred when imports of petroleum products rose sharply in the late 1970s. In 1982, the import shares of petroleum products were 15 percent and 10 percent in Indonesia and Malaysia, respectively. The decline in the share of food imports for Malaysia coincided with the initial phase of import substitution. There was a rapid increase in the annual rate of growth in the import of machinery and transport equipment (SITC 7) particularly in the late 1970s.

Table 5.3 IMPORT STRUCTURE BY MAIN CATEGORIES AND SELECTED COMMODITY GROUPS, BY COUNTRY AND SELECTED YEARS

			By main categories of export							
Country		Total Value	All Food	Ag. raw materials	Fuels	Ores & Minerals	Manufactured	Of Which		
								Chem. prod.	Other manu. gds.	Mach. & equip
	SITC		0+1+ 22+4	2 less (22+27 +28)	3	27+28 +67+68	5 to 8 less (67+68)	5	(6+8) -(67+ 68)	7
Indonesia	1971	1104.3	9.42	1.66	2.62	10.87	75.24	12.52	23.00	39.72
	75	4769.7	12.50	2.81	5.38	12.18	67.09	16.93	12.99	37.17
	79	7183.4	16.00	3.66	11.10	10.98	57.87	14.08	11.89	31.90
	80	10834.4	12.68	3.53	16.19	11.36	55.99	11.58	10.87	33.54
	81	13008.3	11.05	3.20	13.27	11.59	60.35	13.50	11.49	35.36
	82	16530.4	7.16	2.57	21.47	10.31	58.11	10.95	9.33	37.83
Malaysia	1970	1400.6	21.53	2.15	12.07	10.34	52.40	7.29	17.19	27.29
	75	3524.6	18.20	2.06	12.02	10.24	56.73	8.35	15.72	32.66
	79	7835.0	13.55	2.06	12.06	10.55	61.16	10.33	13.60	37.23
	80	10734.6	11.87	1.87	15.15	9.73	60.81	8.88	13.10	38.83
	81	11508.1	12.89	1.67	17.19	9.04	58.58	8.06	13.47	37.05
	82	12363.4	11.69	1.36	15.12	9.63	61.61	7.56	14.30	39.76
Philippines	1970	1210.4	11.22	4.98	11.96	13.70	57.75	11.51	10.86	35.38
	75	3776.2	10.49	3.08	21.19	7.06	52.65	11.72	9.08	31.85
	80	8294.6	7.81	2.15	28.39	8.19	42.35	9.82	8.69	23.85
	81	8477.7	8.50	2.19	30.12	5.57	40.71	9.93	8.21	22.57
	82	8262.3	10.17	2.14	26.48	7.49	40.64	10.12	8.73	21.78
	83	7977.4	8.86	2.15	27.50	6.62	40.65	10.76	8.60	21.30
Singapore	1970	2461.1	16.40	10.30	13.47	5.74	51.96	5.16	24.00	22.81
	75	8135.0	10.76	5.60	24.57	7.95	49.70	5.81	17.70	26.19
	80	24002.7	8.48	5.75	28.67	5.29	50.51	5.59	15.54	29.38
	81	27571.6	7.55	4.09	33.71	5.35	48.20	5.09	15.42	27.70
	82	28167.5	7.80	3.23	33.62	5.53	48.87	5.03	15.86	29.59
	83	28158.4	7.80	3.82	31.27	4.57	51.45	5.07	16.80	31.15
	84	28655.7	10.11	3.43	27.79	4.27	53.20	5.12	16.93	
Thailand	1970	1293.4	5.39	3.44	8.75	10.61	67.27	12.93	19.28	35.56
	75	3279.4	4.34	4.04	21.59	8.95	59.03	13.40	10.85	34.78
	79	7131.7	4.14	5.11	22.51	12.05	51.66	14.91	10.62	26.14
	80	9450.3	5.23	5.46	30.43	9.20	45.30	11.44	9.08	24.78
	81	10055.0	4.41	4.01	29.78	9.57	48.25	12.18	10.14	25.94
	82	8526.7	4.72	3.72	31.02	9.61	46.38	12.40	10.33	23.65

Table 5.3--continued

Selected Commodity Groups

Country		Unallocated	Cereals	Crude & Manu. Fert.	Crude petroleum	Petroleum products	Medical & pharmaceutical	Textile fibers Yard & clothing	Metals & Metal Manu.	Machinery		Transport equipment
										Non-electrical	Electrical	
SITC			04	271+56	331	332	54	26+65 +84	67+68 +69	71	72	73
Indonesia	1971	.19	2.55	2.61	.33	2.07	1.86	10.49	14.12	21.09	6.04	12.59
	75	.03	8.42	8.43	1.15	4.16	.68	5.95	15.24	17.28	8.30	11.59
	79	.39	9.95	.80	6.17	4.87	.73	5.89	13.04	16.33	7.67	7.91
	80	.25	8.05	.69	9.71	6.39	.74	4.74	13.63	17.12	6.91	9.51
	81	.54	2.89	2.89	5.16	8.07	.68	4.36	14.10	17.41	6.72	11.24
	82	.37	1.72	1.08	6.86	14.58	.67	3.07	12.55	20.14	7.13	10.56
Malaysia	1970	1.51	6.92	1.24	8.86	3.07	1.26	6.24	8.43	12.07	4.54	11.31
	75	.75	5.29	1.58	7.55	4.32	1.00	4.90	8.57	13.88	10.07	8.71
	79	.62	4.08	1.96	7.44	4.46	.98	4.22	10.22	12.70	15.63	8.90
	80	.57	3.04	1.96	8.09	6.84	.74	3.89	10.06	13.21	15.62	10.00
	81	.65	3.61	1.43	7.77	9.12	.65	3.69	9.57	13.38	14.78	8.89
	82	.58	3.56	1.12	5.06	9.75	.67	3.27	11.00	13.41	17.49	8.86
Philippines	1970	.40	3.31	1.11	10.32	1.53	1.76	5.72	14.83	20.04	5.37	9.97
	75	5.53	5.19	1.76	19.90	1.17	1.02	4.16	8.75	18.15	4.50	9.20
	80	11.10	3.14	1.90	23.26	4.55	.87	3.21	8.22	12.27	4.83	6.75
	81	12.91	3.22	1.42	25.35	4.14	.88	3.39	7.01	11.15	5.71	5.71
	82	13.08	3.45	1.55	22.26	3.27	1.03	3.20	9.21	11.87	6.05	3.86
	83	14.22	3.53	1.33	22.45	4.47	.99	3.71	8.16	11.30	6.12	3.88
Singapore	1970	2.13	2.53	.46	5.80	7.65	.82	12.01	7.18	11.19	6.51	5.10
	75	1.42	2.04	1.41	18.67	5.88	.78	5.74	10.00	12.17	9.75	4.26
	80	1.30	1.35	.44	23.67	4.98	.40	4.47	6.74	10.46	12.06	6.86
	81	1.10	1.29	.34	30.00	3.69	.35	4.19	7.06	10.73	11.61	5.36
	82	.96	1.37	.37	26.88	6.73	.35	4.25	7.28	11.10	11.58	5.29
	83	1.09	1.07	.28	24.04	7.21	.35	4.63	6.19	10.46	12.71	6.41
	84	1.20	1.61	.20	23.22	4.55	.36	4.56	5.80	10.91	14.36	5.88
Thailand	1970	4.04	.95	1.47	4.46	4.25	2.70	9.01	12.81	17.02	8.09	10.44
	75	2.05	.78	2.42	18.07	3.39	1.76	5.79	9.47	17.66	5.86	11.26
	79	4.52	.79	1.93	16.08	6.18	1.27	4.20	11.67	12.58	6.96	6.59
	80	6.38	.60	1.49	20.31	9.70	1.05	3.61	9.43	10.41	7.18	7.18
	81	3.98	.72	1.65	21.58	7.55	1.04	4.06	10.38	11.66	6.61	7.67
	82	4.55	.64	1.71	22.97	6.66	1.20	4.14	9.72	10.67	7.40	5.58

When the composition of Malaysian imports is classified by economic functions, it was shown that in 1961, consumption goods accounted for 46.7 percent of total imports while intermediate and investment goods accounted for 44.9 percent. By 1980, the share of consumption goods had declined to 18.4 percent while that of intermediate and investment goods had risen to nearly 80 percent (Chee, 1984). This provides confirmation that Malaysia had, more or less, completed the first stage of the industrial development by 1980 and had embarked on the second stage.

Although the import shares for Indonesia were clouded by the rapid increase in the import of petroleum products--from 2 to 15 percent from 1971 to 1982--it did not mask the growing importance of machinery and transport equipment. Table 5.3 shows that import shares were increasing from the late 1970s. This pattern is not surprising considering that government policy had encouraged capital intensive investment in the import competing sectors.

The structure of merchandise imports for Thailand and the Philippines are similar in many aspects. Due to the two severe crude petroleum price increases in the 1970s, the import shares of these two countries subsequently increased sharply. From 1970 to 1982, the import share of crude petroleum increased from 4.5 to 23.0 percent and 10.3 to 22.5 percent for Thailand and the Philippines, respectively. This increase caused import shares for the other categories to decline. However, by examining the annual average growth of import value by industry groups from 1960 to 1980, the growth rates of the important sectors for Thailand were as follows: mineral fuels and lubricants (21.9), chemicals (17.7), machinery (15.4) and lastly food (8.9) (Juanjai Ajanant, 1984). The increase in the share of fuel imports did not detract from the growing importance of investment and intermediate goods, i.e., machinery and equipment.

In the early 1960s, Singapore's trade consisted mainly of transhipments of primary commodities from Indonesia and Malaysia to industrial countries and re-exports of manufactures from the rest of the world to the same neighbors. In recent years, the relative importance of the entrepot trade in primary commodities has declined. This is shown in Table 5.3 where the import share of agriculture raw materials decreased from 10.3 percent in 1970 to 3.4 percent in 1984. On the other hand, the import share of mineral fuels has significantly increased. For example, crude petroleum increased from 5.8 to 23.2 percent from 1970 to 1984. With the development of refinery facilities, the exports of crude petroleum have become insignificant, and the exports of petroleum products have greatly exceeded imports (25.0 percent compared to 4.6 percent).

Singapore's industrialization program has required increasing imports of raw materials, intermediate inputs and machinery. This fact was clearly reflected in the increasing import shares of machinery and equipment from 22.8 percent in 1970 to 31.2 in 1984.

Direction of Trade

The direction of ASEAN exports and sources of imports over the period 1975-1985 are presented in Tables 5.4 and 5.5 respectively. ASEAN's most important trading partner has traditionally been Japan which accounted for 24.6 percent and 19.9 percent of total exports and imports respectively in 1985. In terms of total trade, intra-ASEAN trade was next in importance with intraregional exports and imports of 19.2 percent and 18.2 percent, respectively in 1985. Intra-ASEAN trade will be discussed in the next section. The next important trading partner was the United States with export and import shares of 20.5 percent and 14.5 percent, respectively, in 1985. The last major trading partner in 1985 were members of the European Economic Community (EEC), with 11.5 percent and 13.3 percent of ASEAN exports and imports, respectively. These three major trading partners together accounted for 56.6 percent of exports and 47.4 percent of imports in 1985. The remaining countries of importance under the "Others" category were the other OECD countries, members of OPEC and the east Asian newly industrializing countries (NICs)--South Korea, Taiwan and Hongkong.

The pattern of trade varies among the ASEAN countries. In terms of exports, Japan was the largest market for Indonesia and Malaysia. This was mainly due to Japan's import of oil and natural gas. The United States was the main extra-ASEAN outlet

Table 5.4 DIRECTION OF EXPORTS OF ASEAN COUNTRIES, 1975-1985<a>

	1975	1977	1979	1981	1983	1985	Growth % p.a.
from ASEAN							
to ASEAN	13.6	12.9	14.2	15.3	21.1	19.2	16.4%
Japan	26.6	24.4	26.6	25.8	23.2	24.6	11.6%
USA	19.6	21.4	17.8	16.0	18.2	20.5	13.0%
EEC	13.2	14.5	14.4	10.7	10.2	11.5	11.0%
Others	27.1	26.8	26.9	32.3	27.3	24.2	11.2%
Total	100.0	100.0	100.0	100.0	100.0	100.0	12.5%
from Indonesia							
to ASEAN	10.1	10.3	13.8	11.1	16.2	10.8	10.5%
Japan	43.1	39.1	44.8	44.5	45.0	49.1	11.1%
USA	25.7	27.0	19.8	17.0	19.9	22.7	8.4%
EEC	5.6	8.2	7.4	4.4	4.4	6.6	11.5%
Others	15.6	15.4	14.2	23.0	14.5	10.7	5.6%
Total	100.0	100.0	100.0	100.0	100.0	100.0	9.7%
from Malaysia							
to ASEAN	23.7	18.5	19.5	25.5	27.8	26.1	15.9%
Japan	14.0	20.0	22.7	20.4	18.7	24.6	21.4%
USA	15.7	17.7	16.8	12.6	12.6	12.8	12.4%
EEC	22.9	19.4	17.3	14.7	13.8	14.4	9.6%
Others	23.7	24.3	23.7	26.9	27.1	22.2	14.0%
Total	100.0	100.0	100.0	100.0	100.0	100.0	14.8%
from Philippines							
to ASEAN	2.7	4.0	4.1	7.1	7.0	11.4	24.0%
Japan	37.4	23.1	26.2	21.7	19.8	19.0	.2%
USA	28.9	35.2	30.0	30.7	36.0	35.9	9.6%
EEC	16.4	18.5	20.1	16.0	16.4	14.0	5.5%
Others	14.7	19.2	19.7	24.4	20.8	19.7	10.4%
Total	100.0	100.0	100.0	100.0	100.0	100.0	7.2%
from Singapore							
to ASEAN	14.5	13.5	12.9	17.1	26.7	24.3	21.7%
Japan	8.7	10.0	10.4	10.5	8.8	9.4	16.5%
USA	13.9	16.3	14.9	13.7	17.3	21.2	20.5%
EEC	14.0	14.9	14.9	10.9	8.7	10.6	12.4%
Others	48.9	45.4	47.0	47.7	38.6	34.5	11.6%
Total	100.0	100.0	100.0	100.0	100.0	100.0	15.6%
from Thailand							
to ASEAN	16.6	17.5	16.5	14.4	13.7	14.4	10.4%
Japan	26.7	19.2	21.0	13.9	14.8	13.4	4.6%
USA	10.7	9.5	11.0	12.7	14.5	19.7	19.1%
EEC	15.5	21.4	23.2	21.3	22.0	19.1	14.4%
Others	30.4	32.5	28.3	37.7	34.7	33.5	13.2%
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: International Monetary Fund, Direction of Trade Statistics, various issues

Note: <a> Percentages do not sum to 100 due to rounding errors.

Table 5.5 SOURCES OF IMPORTS OF ASEAN COUNTRIES, 1975-1985<a>

	1975	1977	1979	1981	1983	1985	Growth % p.a.
ASEAN imports							
from ASEAN	12.2	14.9	15.9	15.6	20.4	18.2	14.9%
Japan	22.9	22.5	20.6	21.4	20.3	19.9	8.9%
U.S.	14.8	12.9	14.9	13.6	14.7	14.5	10.3%
EEC	15.3	13.9	12.9	11.5	11.1	13.3	8.9%
Others	34.8	35.8	35.8	37.8	32.1	34.1	10.2%
Total	100.0	100.0	100.0	100.0	100.0	100.0	10.4%
Indonesia's imports							
from ASEAN	8.4	13.8	11.0	12.4	23.2	10.3	8.8%
Japan	29.9	26.3	27.6	29.1	22.5	28.1	5.9%
U.S.	13.5	12.0	13.9	13.1	15.0	14.4	7.2%
EEC	19.0	20.0	14.1	16.1	13.7	21.7	7.9%
Others	29.2	27.9	33.4	29.2	25.5	25.5	5.2%
Total	100.0	100.0	100.0	100.0	100.0	100.0	6.5%
Malaysia's imports							
from ASEAN	15.0	14.4	14.3	17.7	19.6	22.9	18.1%
Japan	19.8	23.1	22.0	24.1	25.3	23.0	14.9%
U.S.	10.6	17.2	14.7	14.4	15.5	15.3	17.4%
EEC	20.2	17.2	17.2	13.7	25.7	24.3	9.4%
Others	34.4	33.3	31.8	30.2	25.9	24.3	9.3%
Total	100.0	100.0	100.0	100.0	100.0	100.0	14.8%
Philippines' imports							
from ASEAN	4.7	6.2	5.6	6.4	8.2	14.2	15.7%
Japan	26.6	24.6	22.3	18.4	16.4	14.0	-2.9%
U.S.	21.6	20.1	22.3	22.1	22.3	8.5	5.1%
EEC	12.4	11.7	13.5	10.0	11.1	8.5	- .3%
Others	34.7	37.3	36.3	43.2	41.8	38.1	4.5%
Total	100.0	100.0	100.0	100.0	100.0	100.0	3.5%
Singapore's imports							
from ASEAN	19.9	23.3	25.0	20.7	24.5	20.4	13.1%
Japan	15.4	15.7	15.9	17.0	15.9	15.0	12.6%
U.S.	14.4	11.3	12.6	11.4	13.3	13.4	12.0%
EEC	11.9	9.9	10.0	8.9	9.1	10.0	10.9%
Others	38.4	39.8	37.3	42.0	37.2	41.2	13.7%
Total	100.0	100.0	100.0	100.0	100.0	100.0	12.9%
Thailand's imports							
from ASEAN	2.7	4.2	7.4	9.9	13.9	14.6	31.5%
Japan	31.8	31.7	25.1	23.8	26.8	26.5	9.0%
U.S.	14.5	12.1	15.3	12.8	11.6	11.4	8.4%
EEC	17.2	14.2	14.4	12.3	12.4	16.7	10.7%
Others	33.9	37.8	37.9	41.2	35.3	30.7	9.9%
Total	100.0	100.0	100.0	100.0	100.0	100.0	11.0%

Source: International Monetary Fund, Direction of Trade Statistics various issues

Note: <a> Percentages do not sum to 100 due to rounding errors.

for Singapore, the Philippines and Thailand. Until recently, Thailand has traditionally sold proportionately more to the EEC. The United States has also been an important market for Indonesia.

In terms of the total ASEAN exports to Japan, Indonesia has always accounted for more than half of the export share (Table 5.6). It was this disproportionately large share of Indonesian exports that made Japan the largest importer of ASEAN goods. Malaysia's export share has also increased from 9.7 percent in 1975 to 22.6 percent in 1985. These two countries' exports of oil and natural gas have adversely affected the Philippines' export share to Japan.

In 1985, the new ASEAN market leader to the EEC, U.S. and Others was Singapore. In terms of the total ASEAN exports to the world, the city state of Singapore led the other ASEAN member countries. Singapore also recorded the highest annual rate of export growth compared to the other member countries over the period 1975-1985 (Table 5.4).

The import shares of total ASEAN imports were more uniform (Table 5.7). In 1985, Japan was the top supplier to Indonesia, Malaysia and Thailand. The U.S. and Japan have been the traditional major exporter to the Philippines but the Philippines' import shares from Japan and the U.S. have declined throughout the period of 1975-1985. Table 5.7 also shows the import shares of total ASEAN imports from the world. Singapore led with an import share of 45.2 percent in 1985. Singapore was

Table 5.6 EXPORT SHARES OF TOTAL ASEAN EXPORTS TO SELECTED DESTINATIONS--1975, 1980 AND 1985<a>

Destination	Origin	Export Share of Total ASEAN Exports		
		1975	1980	1985
ASEAN	Indonesia	25.5	27.9	15.1
	Malaysia	32.1	29.3	30.7
	Philippines	2.1	3.8	4.0
	Singapore	27.1	28.2	42.3
	Thailand	13.2	10.7	7.8
	ASEAN	100.0	100.0	100.0
Japan	Indonesia	55.8	60.5	53.7
	Malaysia	9.7	16.6	22.6
	Philippines	15.3	8.6	5.2
	Singapore	8.3	8.7	12.8
	Thailand	10.9	5.5	5.7
	ASEAN	100.0	100.0	100.0
USA	Indonesia	45.2	38.2	29.7
	Malaysia	14.8	18.8	14.0
	Philippines	16.0	14.2	11.8
	Singapore	18.1	21.5	34.4
	Thailand	5.9	7.3	10.0
	ASEAN	100.0	100.0	100.0
EEC	Indonesia	14.6	16.1	15.4
	Malaysia	32.0	25.4	28.3
	Philippines	13.6	11.4	8.2
	Singapore	27.1	27.6	30.8
	Thailand	12.7	19.4	17.3
	ASEAN	100.0	100.0	100.0
Others	Indonesia	19.9	24.8	11.9
	Malaysia	16.1	15.1	20.6
	Philippines	5.9	6.4	5.5
	Singapore	45.9	44.0	47.6
	Thailand	12.1	9.7	14.4
	ASEAN	100.0	100.0	100.0
Total	Indonesia	34.5	35.6	26.8
	Malaysia	18.4	19.4	22.6
	Philippines	10.9	8.5	6.8
	Singapore	25.4	26.8	33.4
	Thailand	10.8	9.6	10.4
	ASEAN	100.0	100.0	100.0

Source: International Monetary Fund: Direction of Trade Statistics various issues

Note: <a> Percentages do not sum to 100 due to rounding errors.

Table 5.7 IMPORT SHARES OF TOTAL ASEAN IMPORTS FROM SELECTED ORIGINS--1975, 1980 AND 1985<a>

	Import Shares of Total ASEAN Imports		
	1975	1980	1985
ASEAN's exports to			
Indonesia	13.9	12.4	8.0
Malaysia	17.9	16.3	23.5
Philippines	6.0	4.6	6.4
Singapore	59.3	58.5	50.9
Thailand	2.9	8.2	11.2
ASEAN	100.0	100.0	100.0
Japan's exports to			
Indonesia	26.4	24.7	19.9
Malaysia	12.6	17.9	21.6
Philippines	18.0	12.0	5.7
Singapore	24.5	31.2	34.2
Thailand	18.5	14.1	18.6
ASEAN	100.0	100.0	100.0
U.S.'s exports to			
Indonesia	18.5	14.5	14.0
Malaysia	10.4	16.8	19.6
Philippines	22.6	20.1	14.0
Singapore	35.4	34.9	41.5
Thailand	13.1	13.7	11.0
ASEAN	100.0	100.0	100.0
EEC's exports to			
Indonesia	25.1	18.4	23.0
Malaysia	19.2	21.4	20.2
Philippines	12.6	11.2	5.2
Singapore	28.3	33.7	33.9
Thailand	14.9	15.4	17.6
ASEAN	100.0	100.0	100.0
Others' exports to			
Indonesia	17.0	14.8	10.5
Malaysia	14.4	13.6	13.3
Philippines	15.4	14.1	9.0
Singapore	40.2	41.4	54.6
Thailand	13.0	16.1	12.6
ASEAN	100.0	100.0	100.0
World's exports to			
Indonesia	20.2	16.8	14.1
Malaysia	14.6	16.3	18.6
Philippines	15.5	12.6	8.1
Singapore	36.4	40.2	45.2
Thailand	13.3	14.0	14.0
ASEAN	100.0	100.0	100.0

Note: <a> Percentages do not sum to 100 due to rounding errors.

the main importer from Japan (34.2 percent), U.S. (41.5 percent), EEC (33.9%) and Others (54.6 percent). Some of these imports were re-exported.

The Performance, Pattern and Composition of Manufactured Exports

The importance of manufactured exports as seen by the increasing share of exports of ASEAN countries was reviewed earlier. Due to the importance of manufactures, it is instructive to examine the important product groups in these manufactured exports and the shares of manufactures in the exports of ASEAN countries by destinations.

The previous section highlighted the remarkable ASEAN export growth and the increasing importance of manufactures. The average annual growth rates of ASEAN exports and manufactures have been provided by Ariff and Hill (1985:210). Their data show comparative rates for the world, developing countries and the newly industrializing countries of South Korea and Hongkong. External ASEAN exports to the East Asian NICs grew most rapidly among the major trading partners. Yet, by contrast, the growth of manufactures was the slowest at 12.7 percent. This, according to Ariff and Hill (1985), could be attributed to their economic structure in that, as exporters of manufactures, their economies were competitive rather than complementary. Secondly, the natural resource component of their trade grew more rapidly. Ariff and Hill also pointed to the remarkable high growth of ASEAN manufactured exports to the three major trading partners, namely the EEC, U.S. and Japan. Manufactured exports from ASEAN to these destinations and the world grew at more than twice the rate of world exports. ASEAN's growth rates was much higher compared to the average for developing countries.

Individually, all ASEAN countries registered impressive growth. Without exception, each member's manufactured exports grew faster than the world's average. Only the Philippines recorded a slower growth rate. For the period 1970-1981, Indonesia registered the most rapid expansion in both total and manufactured exports.[1] The former was due primarily to the increase in oil price during the period, and the latter to an initial small base. There was considerable variation in the growth rates of each of the member countries to major destinations, but overall, the export performance for ASEAN was impressive.

Ariff and Hill (1985:198) also reported data on the magnitude and trade of ASEAN exports of manufactures by destination. The most significant observation was the rapid increase in the share of manufactures of all ASEAN countries, except Indonesia. Sharp increases in the share of manufactures were recorded in exports to the U.S. and the EEC. There was a modest increase in the share of ASEAN manufactured exports to Japan. Among the ASEAN countries, Singapore registered a very rapid increase in the share of manufactures to Japan, followed by the Philippines. The other member countries, however, achieved insignificant gains. This could be attributed to Japan's stronger comparative advantage in manufactures and its large share of commodity imports from ASEAN. Of particular interest was the share of manufactures within ASEAN countries. The share of manufactures in intra-ASEAN exports increased marginally from 23.5 percent to 29.8 percent over the period 1970-1981. As expected, about half of Singapore's exports to other ASEAN members were in manufactures. The share had in fact declined marginally over the period. Half of Philippines exports were in manufactures but the volume of exports was small. The share of manufactured exports increased sharply for Thailand. One explanation for the slow increase in intra-ASEAN trade is that all countries except Singapore tended to promote agricultural products in their export drive, and opportunities to increase export of manufactures were limited. Domestic markets were also highly protected.

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[1] However, export data over the period 1975-1985 (see Table 5.1) showed that the growth rates for total export have declined. This was due in part to Indonesia's dependence on crude petroleum.

The composition of ASEAN manufactured exports underwent important transformation during the 1970s. Ariff and Hill (1985:201) reported these changes for each country using the ISIC classification. Consistent with the pattern of economic development, the relative importance of food, beverages and tobacco (ISIC 31), though substantial, has declined relative to total manufactured exports for all countries except Malaysia. This exception was due to the high growth in the exports of palm oil and palm oil products. The share of textile and textile products (ISIC 32) rose in general, particularly for the Philippines and Thailand. The share of exports of wood and wood products (ISIC 33) to total manufactured exports also increased significantly for Indonesia, Malaysia and the Philippines. Paper and paper products (ISIC 34) remained a minor sector. Chemicals (ISIC 35), largely from petroleum products, have always accounted for a large share of manufactured products for Indonesia and Singapore. The increase for Indonesia was substantial. Marginal increases were recorded for the Philippines and Thailand while Malaysia suffered a decline in the share of chemical exports. The group comprising nonmetallic mineral products (ISIC 36) was another small sector. The share of basic metal industries (ISIC 37) rose sharply for Indonesia. The share of exports remained substantial for Malaysia and Thailand in 1979 and 1980, respectively, but were severely reduced from 1970. The highest increase occurred in the metal manufactured products (ISIC 38). The shares of total manufactured exports increased substantially for Malaysia, Singapore and Thailand. Most of these increases came from the rapid increase in electrical machinery (electrical and electronic components) produced mainly in the export processing zones (EPZs).

Intra-ASEAN Trade

Discussions on the direction of trade in an earlier section revealed that intra-ASEAN trade has become most important in terms of the total trade value. This is shown in Table 5.8.

The share of intra-ASEAN trade has grown from 12.9 percent in 1975 to a high of 20.7 percent in 1983. It has declined since. Relative to trade with other major trading countries or region, the growth of intra-ASEAN trade was the most rapid. When total trade is separated according to exports and imports, the share of ASEAN exports to Japan was consistently greater than the corresponding import shares over the period 1975-1985 (Tables 5.4 and 5.5). Another interesting feature was the import and export share of the countries under the "Others" category. What is not obvious was the role played by the OPEC countries in this category. While ASEAN exports to OPEC countries accounted for only 3 percent of ASEAN exports, as much as 12 percent of ASEAN imports, mainly petroleum and petroleum products, came from the OPEC countries in 1983 (Rieger, 1985). ASEAN imports rose significantly after 1973 due to the price increase. In 1973, the share of total regional imports was only 5.7 percent.

The level of intra-ASEAN trade when compared to other economic cooperation among developing countries (ECDC) has been most impressive. Table 5.9 shows that the magnitude of intra-ASEAN trade led all other ECDC groups since 1983.[2] Nevertheless, the values depict the relative importance of intraregional trade among the ECDCs. Nevertheless, in comparison with trade within the EEC and the Council of Mutual Economic Assistance (CMEA),

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[2] These values differ slightly from the previous table because of different sources of data.

Table 5.8 INTRA-ASEAN TRADE RELATIVE TO OTHER MAJOR TRADING PARTNERS, 1975 THROUGH 1985

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	Growth % p.a.
Intra-ASEAN	12.9	13.6	13.9	13.7	15.1	15.3	15.5	19.4	20.7	19.3	18.7	15.6%
Japan	24.6	23.5	23.4	23.7	23.6	23.3	23.5	23.1	21.7	22.4	22.3	10.3%
U.S.	17.0	17.5	17.2	17.0	16.4	15.4	14.8	14.4	16.3	17.7	17.6	11.8%
EEC	14.3	14.1	14.2	14.0	13.6	12.1	11.1	10.8	10.9	10.7	12.4	9.8%
other OECD	5.6	5.3	5.4	5.4	5.4	5.3	5.3	5.5	4.8	↑	↑	↑
OPEC (excl. Indonesia)	7.4	7.5	8.1	7.8	7.8	9.0	10.0	9.1	8.0	⋮	⋮	⋮
NICs (excl. Singapore)	5.0	5.4	5.8	6.4	6.5	6.3	6.5	6.3	6.5	29.8	29.1	10.6%
Socialist	1.3	1.1	1.1	1.1	1.1	1.2	1.1	.9	.8	⋮	⋮	⋮
Others	11.9	11.8	10.9	10.9	10.4	12.0	12.3	10.5	10.3			
Total	100	100	100	100	100	100	100	100	100	100	100	11.4%

Source: International Monetary Fund: Direction of Trade Statistics various issues

Note: Percentages may not sum to 100 due to rounding errors

Table 5.9 INTRA-TRADE OF DEVELOPING COUNTRIES, 1960, 1970, 1976, 1980 AND 1983

Region	Value of Intra-trade <1> (mi. of $)					Exports to developing countries as a % of total group exports					Intra-trade of group as % of total exports of each group				
	1960	1970	1976	1980	1983	1960	1970	1976	1980	1983	1960	1970	1976	1980	1983
ASEAN	839	860	3619	11918	17080	32.8	31.7	30.3	35.6	37.7	21.7	14.7	13.9	17.8	23.1
UDEAC<2>	3	33	75	200	80	8.3	11.9	15.0	22.5	10.0	1.6	3.4	3.9	4.1	2.0
CACM<3>	33	299	653	1141	840	10.0	29.6	29.2	30.8	30.8	7.5	26.8	21.6	22.0	21.8
CARICOM<4>	27	73	212	354	360	12.2	16.6	17.6	20.0	22.5	4.5	7.3	6.7	6.4	9.3
LAIA OR ALADI<5>	564	1290	4434	1027	8200	19.4	21.2	26.9	28.1.	.27.5	7.7	10.2	12.8	13.5	10.2
of which															
ANDEAN<6>	25	109	594	955	1037	28.8	29.3	36.2	31.6	37.2	.7	2.3	4.2	3.5	4.3
CEAO<7>	6	73	177	296	406	14.8	15.1	13.6	15.9	20.7	2.0	9.1	6.7	6.9	11.6
ECOWAS<8>	17	61	478	1056	860	6.7	8.6	20.5	6.2	21.3	1.2	2.1	3.1	3.9	4.1

Source: UNCTAD: Handbook of International Trade and Development Statistics, 1985

Notes:

<1> Based on exports
<2> Central African Customs and Economic Union
<3> Central American Common Market
<4> Caribbean Community
<5> Latin American Integration Association
(formerly Latin American Free Trade Association)
<6> Andean Common Market
<7> West African Economic Community
<8> Economic Community of West African States

Table 5.10 INTRA-TRADE OF DEVELOPED COUNTRIES, 1960, 1970, 1976, 1980 AND 1983

	Value of Intra-Trade									Share of intra-trade in total group exports (%)								
	1960	1970	1972	1973	1975	1980	1981	1982	1983	1960	1970	1972	1973	1975	1980	1981	1982	1983
EC(6)	10.6	43.4	61.4							34.6	48.9	49.5						
EC expanded 9)				110.5	145.9	347.0	308.0	303.0	298.9				52.3	49.4	52.8	50.9	51.9	52.4
MEA<1>	8.1	18.4	24.2	29.9	44.4	79.0	79.2	86.7	93.1	62.3	59.4	60.5	56.5	57.4	51.0	50.5	52.5	53.7

ource: as in Table 5.9
1> Council for Mutual Economic Assistance

the level of intra-ASEAN trade was still relatively low (Table 5.10). Within the EEC and CMEA, more than half of all trade was conducted between regional members.

Distribution of Intra-ASEAN Trade Flows

A comparison of the magnitude of intra-ASEAN trade flows for the year 1983 shows the following (Rieger, 1985:13):

a. Singapore's exports to Indonesia,
b. Malaysia' exports to Singapore,
c. Indonesia's exports to Singapore, and
d. Singapore's exports to Malaysia.

These intercountry flows constituted 75 percent of all intra-ASEAN trade in 1982. If Singapore's trade with Thailand were added, the figure would increase to 85 percent. Intercountry trade flows excluding Singapore are a small proportion of intra-ASEAN trade.

A comparison of the magnitude of inter-ASEAN trade flows for the year 1985 showed a reordering of the major trade flows as follows:

a. Singapore's exports to Malaysia,
b. Malaysia's exports to Singapore,
c. Singapore's exports to Indonesia, and
d. Indonesia's exports to Singapore.

These four trade flows constituted about 65 percent of all intra-ASEAN trade in 1985. If Singapore's trade with Thailand were added, the percentage would increase to 75 percent (Sahathavan M. and Ismail Haron, 1987).

Table 5.11 shows the member country's share of the total intra-ASEAN trade. Singapore dominated with a share of 46.4 percent for total intraregional trade in 1985. Its import share at 50.7 percent was higher than the export share. Malaysia was second with a share of 27.3 percent in total intraregional trade in 1985.

A significant feature was the decrease in Indonesia's share of total intra-ASEAN, exports and imports. Indonesia's share reduced from almost 20 percent in 1975 and 1980 to only 11.7 percent in 1985. Indonesia's export share declined more than 10 percent over the 10-year span and its import share declined 5.9 percent.

In terms of the importance of intra-ASEAN trade relative to each country's total external trade, Table 5.12 reveals that Malaysia has the highest share, followed by Singapore, Thailand, the Philippines and Indonesia. The share of Indonesia's intraregional trade relative to total external trade declined drastically from a high of 19.3 percent in 1983 to 10.6 percent in 1985. Except for Indonesia, the shares for all the other member countries increased over the period.

Table 5.11 SHARE OF TOTAL INTRA-ASEAN TRADE, BY MEMBER COUNTRY 1975, 1980 AND 1985 <a>

	1975	1980	1985
<u>Share of Total Trade</u>			
Indonesia	19.6	19.8	11.7
Malaysia	24.9	22.5	27.3
Philippines	4.1	4.2	5.1
Singapore	43.6	44.1	46.4
Thailand	7.9	9.4	9.5
Total	100.0	100.0	100.00
<u>export share</u>			
Indonesia	25.5	27.9	15.1
Malaysia	32.1	29.3	30.7
Philippines	2.1	3.8	4.0
Singapore	27.1	28.2	42.3
Thailand	13.2	10.7	7.8
Total	100.0	100.0	100.0
<u>import share</u>			
Indonesia	13.9	12.4	8.0
Malaysia	17.9	16.3	23.5
Philippines	6.0	4.6	6.4
Singapore	59.3	58.5	50.9
Thailand	2.9	8.2	11.2
Total	100.0	100.0	100.0

Source: International Monetary Fund, Direction of Trade Statistics, various issues

Note: <a> Percentages may not sum to 100 due to rounding errors.

Table 5.12 SHARE OF INTRA-ASEAN TRADE RELATIVE TO TOTAL TRADE, 1975 THROUGH 1985

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
share of intra-ASEAN trade in total trade of											
Indonesia	9.4	10.6	11.6	11.1	12.9	11.5	11.6	17.1	19.3	12.4	10.6
Malaysia	19.4	18.2	16.7	16.3	17.3	19.2	21.7	24.2	23.9	22.9	24.7
Philippines	3.9	5.1	5.7	5.7	5.0	6.1	6.7	6.6	7.8	10.7	12.9
Singapore	17.9	19.3	18.7	18.7	20.2	20.1	19.3	24.0	25.4	25.3	22.1
Thailand	8.4	9.9	9.8	9.8	11.2	12.2	11.8	13.3	13.8	13.9	14.5
share of intra-ASEAN exports in total exports of											
Indonesia	10.1	8.7	10.3	12.4	13.8	11.3	11.1	15.5	16.2	11.4	10.8
Malaysia	23.7	21.1	18.5	18.0	19.5	21.7	25.5	28.9	27.8	25.9	26.1
Philippines	2.7	3.1	4.0	6.0	4.1	6.4	7.1	7.1	7.0	9.7	11.4
Singapore	14.5	13.9	13.5	12.2	12.9	15.1	17.1	24.6	26.7	29.3	24.3
Thailand	16.6	16.6	17.5	15.2	16.5	16.0	14.4	15.2	13.7	14.1	14.4
share of intra-ASEAN imports in total imports of											
Indonesia	8.4	13.5	13.8	9.2	11.0	11.9	12.4	19.1	23.2	14.0	10.3
Malaysia	15.0	14.1	14.4	14.1	14.3	16.2	17.7	19.6	19.6	19.5	22.9
Philippines	4.7	6.4	6.2	5.4	5.6	5.9	6.4	6.3	8.2	11.6	14.2
Singapore	19.9	22.0	23.3	22.9	25.0	23.5	20.7	23.6	24.5	22.3	20.4
Thailand	2.7	3.3	4.2	5.7	7.4	9.5	9.9	11.7	13.9	13.7	14.6

Source: compiled from International Monetary Fund: Direction of Trade Statistics, various issues

Composition of Intra-ASEAN Trade[3]

The analysis is based on the Standard International Trade Classification (SITC) single-digit and the data were published by the Institute of Southeast Asian Studies (Rieger, 1985). The ten commodity groups discussed here are as follows:

SITC 0: food and live animals, chiefly for food;
1: beverages and tobacco;
2: crude materials, inedible except fuels;
3: mineral fuels, lubricants and related materials;
4: animal and vegetable oils, fats and waxes;
5: chemicals and related products not elsewhere specified (nes);
6. manufactured goods, chiefly specified by materials;
7. machinery and transport equipment;
8. miscellaneous manufactured articles; and
9. commodities and transactions not classified according to kind.

The composition of intra-ASEAN exports and imports are presented in Tables 5.13 and 5.14 respectively. The striking feature is the predominance of petroleum and petroleum products (SITC 3) in Singapore's trade with Indonesia and Malaysia and Thai imports from Singapore and Malaysia. For the region as a whole, trade in petroleum and petroleum products (SITC 3) consisted of 62.6 percent of all intra-ASEAN trade.

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[3] Analysis of ASEAN trade based on the Direction of Trade Statistics or the UNCTAD data suffer from a number of drawbacks. These include, amongst others, the discrepancies between exports and imports, particularly for Singapore (due to entrepot trade). Malaysian exports to the United States are considered by Malaysia as exports to the United States. Whereas, Singapore may consider it as an import from Malaysia and as Singapore's exports to the United States. As such, double counting may lead to over-estimates. Secondly, Singapore does not publish any statistics on trade with Indonesia.

Table 5.13 COMPOSITION OF INTRA-ASEAN EXPORTS BY COUNTRY, 1982 (US$'000)[a]

TRADE		SITC GROUPS										
		0	1	2	3	4	5	6	7	8	9	Total in million US$
Indonesia Exports To	Malayaia	8387	281	32554	13269	-	827	3121	93	301	247	59
	Philippines	998	...	863	265218	344	11226	13951	25	17	172	293
	Singapore	80149	2325	231574	2303860	19794	5784	286723	129823	23851	37023	3121
	Thailand	270	-	21983	1088	122	545	2145	50	21	115	26
	Total	89804	2606	286974	2583435	20260	18382	305940	129991	24190	37557	3499
	%	2.57	.07	8.20	73.83	0.58	0.53	8.74	3.72	0.69	1.07	100.00
Malaysia Exports To	Indonesia	1132	374	4644	3188	159	3612	5281	18412	700	967	38
	Philippines	9149	-	707	77457	3455	4191	12410	17237	3478	1092	129
	Singapore	172096	7318	378159	1661594	257737	35195	156676	290557	41992	3984	3005
	Thailand	7035	-	36880	365744	8861	3784	4817	13125	1452	301	442
	Total	189412	7692	420390	2107983	270212	46782	179184	339331	47622	6344	3614
	%	5.24	0.21	11.63	58.32	7.48	1.28	4.96	9.38	1.32	0.18	100.00
Philippines Exports To	Indonesia	27936	136	16	-	-	2986	17434	1203	901	4376	55
	Malaysia	7958	5	24	54	2	1974	3014	12621	2432	149512	178
	Singapore	16516	604	3732	5775	4333	3771	5592	5739	5220	59673	111
	Thailand	335	27	116	546	22	1419	914	3604	945	6427	14
	Total	52745	772	3888	6375	4357	10150	26954	23167	9498	219988	358
	%	14.73	0.22	1.09	1.78	1.24	2.84	7.53	6.47	2.65	61.45	100.00
Singapore Exports To	Indonesia	17424	3633	8293	2140234	1227	84364	131019	405241	23377	4181	2819
	Malaysia	33348	5967	14629	1234058	8493	55396	119826	174417	37145	36409	1720
	Philippines	14310	121	753	125095	283	9786	6853	20354	3287	13854	195
	Thailand	4424	1694	3436	424177	4452	14231	7965	55837	5708	22275	544
	Total	69506	11415	27111	3923564	14455	163777	265663	655749	69517	76719	5278
	%	1.32	0.22	0.53	74.34	0.27	3.10	5.03	12.42	1.32	1.45	100.00
Thailand Exports To	Indoneaia	137869	5177	17340	251	-	3391	13545	4561	661	300	183
	Malaysia	264029	105	26706	459	274	3879	23519	19881	4429	1903	345
	Philippinea	19758	694	717	79	12	527	5611	3300	717	302	32
	Singapore	184634	2709	58611	641	274	5985	74931	113507	27883	4232	473
	Total	606290	8685	103374	1430	560	13782	117606	141249	33690	6755	1033
	%	58.68	0.84	10.00	0.14	0.05	1.33	11.38	13.67	3.26	0.65	100.00
ASEAN	TOTAL	1007757	31170	841737	8622787	309844	252873	895347	1289587	184517	347363	13783
ASEAN	%	7.3	0.2	6.1	62.6	2.2	1.8	6.5	9.4	1.3	2.5	100.00

Source: Compiled from Rieger, 1985

Note: <a> Percentages may not sum to 100 due to rounding errors.

Table 5.14 COMPOSITION OF INTRA-ASEAN IMPORTS BY COUNTRY, 1982 (US$'000)[a]

TRADE		SITC GROUPS										
		0	1	2	3	4	5	6	7	8	9	Total in million US$
Indonesia Imports From	Malaysia	1132	374	4644	3188	159	3612	5281	18412	700	967	38
	Philippines	27936	136	16	-	-	2986	17434	1203	901	4376	55
	Singapore	17424	3633	8293	2140234	1227	84364	131019	405241	23377	4181	2819
	Thailand	137869	5172	17340	251	-	3391	13545	4561	661	300	183
	Total	184361	9320	30293	2143422	1386	94353	167279	429417	25639	9824	3095
	%	5.96	0.30	0.98	69.25	0.04	3.05	5.40	13.87	0.83	0.32	100.00
Malaysia Imports From	Indonesia	8387	281	32554	13269	-	827	3121	93	301	247	59
	Philippines	7958	5	24	54	2	1974	3014	12621	2432	149512	178
	Singapore	33348	5967	14629	1234058	8493	55306	119826	174417	37145	36409	1720
	Thailand	264029	105	26706	459	274	3879	23519	19881	4429	1903	345
	Total	313722	6358	73913	1247840	8769	62076	149480	207012	44307	188071	2302
	%	13.63	0.28	3.23	54.21	0.38	2.70	6.49	8.99	1.92	8.17	100.00
Philippines Imports From	Indonesia	998	-	863	265218	344	11226	13951	25	17	172	293
	Malaysia	9149	-	707	77457	3455	4191	12410	17237	3478	1092	129
	Singapore	14310	121	753	125095	283	9786	6853	20354	3287	13854	195
	Thailand	19758	694	717	79	12	527	5611	3300	717	320	32
	Total	44215	815	3040	467849	4094	25730	38825	40916	7499	15438	649
	%	6.81	0.13	0.47	72.09	0.63	3.96	5.98	6.39	1.16	2.38	100.00
Singapore Imports From	Indonesia	80149	2325	231574	2303860	19794	5784	286723	129823	23851	37023	3121
	Malaysia	172096	7318	378159	1661594	257737	35195	156676	290557	41992	3984	3005
	Philippines	16516	604	3732	5775	4333	3771	5592	5739	5220	59673	111
	Thailand	184634	2709	58611	641	274	5985	74931	113507	27883	4232	473
	Total	453395	12956	672076	3971870	282138	50735	523922	539626	98946	104912	6710
	%	6.76	0.19	10.02	59.19	4.20	0.76	7.81	8.04	1.47	1.56	100.00
Thailand Imports From	Indonesia	270	-	21983	1088	122	545	2145	50	21	115	26
	Malaysia	7035	-	36880	365744	8861	3784	4817	13125	1452	301	442
	Philippines	335	27	116	546	22	1419	914	3604	945	6427	14
	Singapore	4424	1694	3436	424177	4452	14231	7965	55837	5708	22275	544
	Total	12064	1721	62415	791555	13457	19979	15841	72616	8126	29118	1026
	%	1.76	0.17	6.08	77.15	1.21	1.75	1.54	7.08	0.79	2.47	100.00
ASEAN	TOTAL	1007757	31170	841737	8622787	309844	252873	895347	1289587	184517	347363	13783
ASEAN	%	7.3	0.2	6.1	62.6	2.2	1.8	6.5	9.4	1.3	2.5	100.00

Source: as Table 4.16

Note: <a> Percentages may not sum to 100 due to rounding errors.

Indonesia's exports to Singapore comprised 89 percent of Indonesia's total intra-ASEAN exports (Table 5.13). Besides petroleum and petroleum products, Indonesia exported crude materials (SITC 2) and manufactured goods (SITC 6), chiefly to Singapore. Malaysian exports to Singapore dominated (at 83 percent) its total intra-ASEAN exports. Other than petroleum and petroleum products, Malaysia exported machinery and transport equipment (SITC 7) to Singapore. Philippines' exports to other member countries were relatively small in 1982. Singapore's exports of machinery and transport equipment (SITC 7), particularly to Indonesia and Malaysia, were sizable with a share of 12.4 percent. More than half (58.7 percent) of Thailand's intra-ASEAN exports were in food (SITC 0) with Malaysia being the largest market. Table 5.14 shows the intraregional imports of the five member countries. Without exception, all the countries' imports were dominated by imports of petroleum and petroleum products.

Overall, petroleum and petroleum products was the major commodity group in intra-ASEAN trade. This has serious implications for the level of future intraregional trade due--particularly with new refining capacities being developed in Indonesia and Malaysia. With a reduction of intra-ASEAN trade in petroleum and petroleum products, the magnitude of intra-ASEAN trade is expected to be severely reduced. The potential of an increase in intraregional trade will rest on manufactures (SITC 5 to 8). In 1982, these comprised 19.0 percent of total intra-ASEAN trade (Tables 5.13 and 5.14). Prior to the emphasis on export-oriented industrialization, ASEAN's exports consisted mostly of primary products, while imports were almost exclusively of manufactured goods. These could be termed interindustry trade. The increasing share of manufactures in the total exports of ASEAN countries during the 1970s has given rise to possibilities of increasing intra-ASEAN (as well extra-ASEAN) intraindustry trade.[4]

The phenomenon of intraindustry trade is explained by several factors (Grubel and Lloyd, 1975). Firstly, the presence of transport, storage and selling costs can result in international trade in functionally homogenous goods. Transport

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[4] Intra-industry trade may be defined as the value of exports of an "industry" which is matched by the imports of the "same" industry. The index is derived by subtracting the total trade of a given industry from net imports or exports of that industry and then dividing the term by the total trade of the industry, i.e.,

$(R - S)/R$ where

$$R = \leftarrow_k (X^k_{ij} + M^k_{ij})$$

$$S = \leftarrow_k |X^k_{ij} - M^k_{ij}|$$

and X^k_{ij} = exports of industry i to country j of industry k

M^k_{ij} = imports of industry i to country j of industry k

When expressed in percentage terms, the measure would vary from zero to 100. It would be zero if there is only inter-industry trade (i.e., only exports or imports of commodity k, but not both). It would be 100 with only intraindustry trade (i.e., exports of commodity k exactly equals imports of commodity k.

costs give rise to border trade especially where geographic regions are more closely integrated to other countries than to regions within their own country.

A second explanation for intraindustry trade is the existence of economies of scale which may give rise to vertical intraindustry specialization among countries. This specialization generates international trade of inputs, intermediate and final products within the same industry. A third factor is intraindustry trade emerging through product cycles and international subcontracting arrangement. The second and third explanations are unlikely to have generated substantial intraindustry trade within ASEAN. The production of manufactures from direct foreign investments, however, is likely to induce considerable extraregional, intraindustry trade.

Ariff and Hill (1985:207), have computed indices of intra-industry trade in manufactures of the ASEAN countries. The indices for each of ASEAN's major trading partners in 1970 and 1981 (at the SITC 3-digit level) were found to be high and increasing for each ASEAN country except Indonesia over this period. Extra-ASEAN intraindustry trade was important with the United States, East Asian NICs and the EEC. The index with Japan remained low.

The indices of intra-ASEAN, intraindustry trade increased for every pair of ASEAN countries in the 1970s. The development of larger economies and more sophisticated industrial structures were the reasons given. The increased intra-ASEAN, intraindustry trade flows may be due, in part, to the various integration arrangements among the ASEAN countries. This possibility will be reviewed in the next chapter. The fact that intra-ASEAN intraindustry trade indices increased significantly in the 1970s is indicative of the growing intraindustry specialization in the region and this augers well for the potential of increasing intraregional trade in manufactures.

Intra-ASEAN Trade in Food[5]

The last section of this chapter will examine the composition of intra-ASEAN trade in food items. From Tables 5.13 and 5.14, it was noted that total intra-ASEAN exports of foods items (SITC 0) amounted to $1007.8 million in 1982 and this accounted for 7.3 percent of total intra-ASEAN exports. These and the major commodities in intra-ASEAN trade are presented in Table 5.15. Thailand exported the most to other ASEAN countries. The major exports were rice, maize and sugar. The exports accounted for 58.7 percent of Thailand's total intra-ASEAN trade in 1982. Singapore imported mainly from Malaysia (fish, fruits, vegetables and spices) and Thailand (fish, rice, maize, coffee and animal feedstuff) whereas Malaysia imported mainly from Thailand (rice,

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[5] For a more comprehensive account, see Eddie F.C. Chiew, "ASEAN Cooperation in Food And Agriculture: Looking Back/Looking Forward," paper presented at the First ASEAN Economic Congress, Kuala Lumpur, March 13-23, 1987 and Eddie F.C. Chiew, "ASEAN Food Security, Economic Cooperation and Potential of Intra-ASEAN Trade," paper presented at the seminar on Food Security and Policy Issues in Malaysia, at University of Agriculture Malaysia, July 28-29, 1986.

Table 5.15 INTRA-ASEAN TRADE IN FOOD ITEMS (SITC 0), 1982

Country	To other ASEAN countries (million US$)	Share of Total Intra-ASEAN trade (%)	Major Food Items
Exports of			
Indonesia	89.0	2.6	Cocoa, fresh fish, spices
Malaysia	189.4	5.2	Cocoa, fruits & nuts, live animals, fresh vegetables
Philippines	52.7	14.7	-
Singapore	69.5	1.3	-
Thailand	606.3	58.7	Rice, unmilled maize, sugar, animal feedstuff
ASEAN	1007.8	7.3	Rice, unmilled maize, fresh fish, sugar, animal feedstuff, fresh vegetables.
Imports of			
Indonesia	184.4	6.0	Rice, sugar
Malaysia	313.7	13.6	Unmilled maize, fish, sugar, cereals, vegetables
Philippines	44.2	6.8	Unmilled maize
Singapore	453.4	6.8	Rice, unmilled maize, fish, vegetables, spices, live animals
Thailand	12.0	1.8	-
ASEAN	1007.8	7.3	Rice, unmilled maize, fresh fish, sugar, animal feedstuff, fresh vegetables

Source: Chiew (1986).

maize, fish, fruits, crustaceans and molluscs, cereal preparations, vegetables and sugar). The main commodities traded in the region in their order of importance were rice, unmilled maize, fish, sugar, animal feedstuff, fresh vegetables, cocoa, spices, preserved fruits and cereal preparations.

For the decade ending 1985, ASEAN has had a surplus in rice in every year except for 1975 and 1978. This surplus was due mainly to Thailand's exportable surplus as the major rice exporter in the world. Indonesia, traditionally the world's largest importer achieved self-sufficiency in 1985. The Philippines is also self-sufficiency or nearly so.throughout the decade. Malaysia's imports have been rising to about 0.4 million tons annually since 1982. Singapore is a nonproducer. Thailand has traditionally been a major source of rice imports for Malaysia, Singapore and Indonesia. Next to rice, maize was the main commodity traded among ASEAN countries. ASEAN has a surplus in maize. The 1983 trade data shows that Malaysia, Singapore and the Philippines imported maize from Thailand. In the same year, the Philippines and Thailand exported sugar. Indonesia was self-sufficient. Philippines' exports were mainly to third countries such as the U.S., Japan and South Korea. Thailand exported to sugar-deficit member countries as well as to Japan and South Korea. The main source of sugar imports for Malaysia and Singapore was Australia. The potential of intra-ASEAN trade in food items will be discussed in Chapter VII.

CHAPTER VI
ASEAN ECONOMIC COOPERATION

Much has been written on ASEAN since its formation almost two decades ago. While the five member countries have achieved wide international recognition as a viable and cohesive block, achievements in economic cooperation have so far been disappointing. This chapter will review the progress of ASEAN since its formation.

Its Formation and Early Years[1]

The Association of Southeast Asian Nations (ASEAN) was founded when the foreign ministers of Indonesia, Malaysia, Philippines, Singapore and Thailand signed the Bangkok Declaration in 1967 expressing their desire for regional cooperation to accelerate the economic growth, social progress and cultural development in the region. Brunei, the small but oil-rich state, became the sixth member in 1984.[2]

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[1] For a comprehensive account, see R. Irvine (1982).

[2] Due to the late entry of Brunei and a lack of data, this study focuses on the five founding members.

In the Sixties, Southeast Asia was a region beset with problems and uncertainties. In 1967, the year the Bangkok Declaration was signed, the Vietnam conflict raged on unabated and fighting continued into Cambodia. Indonesia's confrontation campaign against Malaysia had just ended over the latter's formation, and the Philippines had not settled its disputed claim over Sabah with Malaysia. Singapore had been independent since 1965 after the breakup from Malaysia. The Association of Southeast Asia (ASA), a previous attempt at regionalism, ended in failure and Maphilindo, a regional concept comprising Malaysia, Philippines and Indonesia, did not get off the ground.

Mindful of the previous unsuccessful attempts at regionalism in ASA and Maphilindo and preoccupied with developments in seeking a political solution in Indochina, ASEAN began in a very modest manner. The Bangkok Declaration was only a brief, unpretentious document. The five countries wanted to bind themselves together through a collective agreement, in friendship and cooperation, to accelerate economic growth, social progress and cultural development in the region. Joint endeavors were to be taken in the spirit of equality and partnership for mutual benefit.

The Bangkok Declaration was not a formal charter. It had no grandiose plans at economic integration or supranational objectives. It did not seek to eliminate internal tariffs or impose a common external tariff. It did not seek to be a common market. Other regional groupings among developing countries were often accompanied by formal charters with ambitious objectives and detailed economic plans for cooperation.[3] These plans were often accompanied by elaborate and bureaucratic implementing machinery. There was not even an ASEAN secretariate for the first nine years. Economic cooperation was pursued by national secretariates under the charge of their respective foreign ministries and through their diplomatic missions. Cooperation among member countries in the early years was more symbolic than substantive. The partners in the initial years learned to know one another through cultural and social exchanges. They laid the framework for periodic consultations and took stands on issues through consensus. ASEAN'S cooperation process in its early years was open-ended and unstructured. In fact, the term "cooperation" was used for regional activities rather than the term "integration". Integration usually refers to more positive and specific processes of economic cooperation. According to Balassa (1976), "cooperation" includes various measures designed to harmonize economic policies and to lessen discrimination whereas "integration" comprises those measures designed to suppress or remove discrimination. For example, an international agreement on trade belongs to the broad area of economic cooperation, but the abolition of trade restrictions among countries in a region is an act of economic integration.

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[3] Some of these were reviewed earlier. For a more detailed account of the integration schemes among these developing countries, see Demas (1960), Balassa (1966), Wionczek (1969), Yudelman and Howard (1970), Quiros-Guardia (1971), Balassa and Stoutjesdijk (1975) and El-Agraa (1982).

There was therefore in ASEAN, a laissez-faire attitude towards economic cooperation. Consequently, no agreed pace of cooperation was forced upon member countries. A structure evolved around permanent committees which were organized to discuss a wide range of interests, such as commerce and industry, tourism, agriculture, transportation and communications. As early as 1971, regional issues such as trade fairs and trade promotion, trade liberalization, harmonization of trade statistics, industrial complementation and other matters were discussed by the Permanent Committee on Trade and Industry (Castro, 1980).

The Bali Summit and After

The pace of ASEAN economic cooperation quickened after the fall of South Vietnam in April 1975. The communist takeover of Indochina prompted the ASEAN heads of government to meet at Bali in February 1976, nine years after the Bangkok Declaration. The meeting ended in the signing of the Declaration of ASEAN Concord which set forth guidelines for a more comprehensive program in regional economic cooperation.[4] Much of the program of action for ASEAN economic cooperation was drawn from the Report of the United Nations Team on Economic Cooperation (also known as the Kansu Report) submitted in 1972 (United Nations, 1974).[5]

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[4] The Treaty of Amity and Cooperation was also signed at Bali. For the full text of the Declaration and Treaty, see ASEAN Secretariate, 1985.

[5] United Nations. "Economic Cooperation Among Member Countries of the Association of Southeast Asian Nations." J. Development Planning, 7(1974).

The report proposed three principal techniques of cooperation. These are

a. Selective trade liberalization for specific commodities to be implemented through governmental negotiations with a limited free trade area as a long-run goal;

b. Industrial complementation to be negotiated through the initiatives of the private sector with appropriate tariff concessions from member countries; and

c. Package deal arrangements in the form of joint large-scale industrial projects, for a specified and limited period of time, to be allocated among the ASEAN countries. Appropriate conditions such as tariff concessions given would enable them to serve the whole or a large part of the ASEAN market.

The Declaration of ASEAN Concord sets forth the principles for ASEAN economic cooperation under the headings of cooperation in basic commodities, particularly food and energy; industrial cooperation; cooperation in trade; and joint approach to international commodity problems and other world economic problems. The pattern of ASEAN economic cooperation consequently reveals the impact and influence the UN Report has had on the existing mechanism of economic cooperation.

The Mechanism of Economic Cooperation

The existing mechanism of ASEAN economic cooperation has four major components. These are

a. Preferential Trading Arrangements (PTA),
b. ASEAN Industrial Projects (AIC),
c. ASEAN Industrial Complementation (AIC), and
d. ASEAN Industrial Joint Venture (AIJV).

Preferential Trading Arrangements

Trade liberalization is the most fundamental form of regional economic integration. The member countries of ASEAN are committed to trade liberalization as a long term objective, to be pursued through the framework of ASEAN's Preferential Trading Arrangements. The instruments for trade expansion under the PTA are

a. exchanges of tariff preferences,

b. long-term quantity contracts,

c. purchase finance support at preferential interest rates,

d. preferences in government procurement, and

e. liberalization of nontariff measures.

The PTA does not have a time frame for dismantling internal trade barriers or striving towards an ultimate goal such as a free trade area.[6] It merely provides a mechanism whereby intra-ASEAN trade can be liberalized at a pace acceptable to all member countries. Of the instruments, the exchange of tariff preferences is the most preferred and this approach is being pursued through a voluntary as well as across-the-board reductions.

Negotiations for exchanges of tariff preferences are conducted quarterly in the Trade Preferences Negotiating Groups of the Committee of Trade and Tourism (COTT). The proposals are then considered by COTT before final approval by the ASEAN Economic Ministers (AEM). Initially, tariff reductions were carried out on a cautious product-by-product basis through a voluntary approach. Voluntary offers are granted unilaterally by the individual countries and applicable to all countries. The first series of offers in 1977 listed 71 products, 14 from each country (15 from Indonesia) on which tariffs were reduced by 10 percent.[7]

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[6] As a long term objective, the UN Report recommended that ASEAN governments an intent to develop an ASEAN free trade area and abolish all trade barriers by some specified future date.

Agreement was reached in June 1978 on further cuts. Each country would offer a minimum of 50 items at each quarterly negotiating session. This was later raised to 150 each or a total of 750 preferences per quarter--3,000 per year.

At about the same time, the negotiations on tariff reduction were changed from a 4-digit to the 7-digit Brussels Tariff Nomenclature (BTN). This meant that items were now so minutely defined that it would take years to complete the trade liberalization process. This considerably reduced the significance of increased intraregional trade. Notwithstanding, by the end of 1980, the AEM had approved 5,825 preferences under the PTA. By May 1981, the total was 6,581. Despite the seemingly large number of items given preferences, studies have shown that its impact on intra-ASEAN trade has been minimal.[8]

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[7] The items offered for the most part were relatively insignificant in mutual trade. The 10% reduction in tariff rates which in some cases exceeded 100% in effective terms were not expected to affect the intra-regional trade flows.

After 1980, the focus of trade liberalization shifted from the laborious voluntary product-by-product offers to an across-the-board approach. Initially, tariff cuts of 20 to 25 percent were, subject to national lists, extended to items below an import value of US$50,000. This added about 6,000 items to the PTA. Subsequently, the 16th AEM meeting approved a raise of import ceilings of all items exceeding US$10 million with margins of preference up to a maximum of 50 percent. By September 1984, the list of items exchanged under the PTA had totalled 18,395 (Malaysia: Economic Report 1984/85). It was also announced at the meeting that 3,558 items under the PTA had been given further tariff cuts of up to 30, 40 and 50 percent effective May 1984. The margin of preference for AIJV products was subsequently increased to 70 percent at the 1987 annual ministerial meeting held in Singapore.

In terms of numbers, the PTA preferences appear impressive, but its impact on intra-ASEAN trade has been severely limited by the national exclusion list comprising "sensitive products". Trade items which made use of the PTA comprised less than 5 percent of intraregional trade (Economist, Feb. 15, 1986). These exclusion lists have been recognized to be an obstacle to the expansion of intra-ASEAN trade. As a consequence, efforts have been directed to reduce the number of items excluded. Guidelines have been drafted (15th COTT meeting in March 1985) to justify items in the exclusion lists. Working out an effective yet enforceable criterion for exclusion lists is likely to be a most fruitful but difficult task.

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[8] Studies on the effectiveness of the PTA in increasing intra-ASEAN trade can be found in Naya (1977), Tan (1982) and Ooi (1984).

Besides moves to shorten exclusion lists, tariff preferences are expected to be expanded and deepened on a sectoral basis in order to speed up the liberalization of intra-ASEAN trade. Food and nonfood sectors such as textiles, chemicals, rubber and rubber products and cement and cement products were identified for greater margins of preference.

The exchange of tariff preferences has been the instrument of trade expansion under the PTA. Other instruments such as long-term quantity contracts, purchase finance support, preferences in government procurement and liberalization of nontariff barriers have not been emphasized in the past. However, at the 16th AEM meeting in May 1984, a decision was made to direct COTT has minimize administrative barriers to trade in its future negotiations. A recent review of the PTA by the COTT has called for activating other PTA instruments besides exchanges of tariff preferences.

Industrial Cooperation

The impact of the PTA on trade liberalization has been minimal. This is understandable and the reasons are apparent. There is the fear, particularly by the lesser-developed countries within ASEAN, of unimpeded trade flows and the disruptive effects it would have on their domestic economies. With the exception of perhaps Indonesia, the domestic markets of the other members are too small to permit efficient production of a wide variety of manufacturing industries on a scale to be competitive in the international market. Industrial cooperation by the pooling of resources and markets would give the region greater advantages from economies. An added attraction of industrial cooperation, unlike the PTA, is that it provides an impetus for continued growth in intraregional trade. Regional plants would give rise to more predictable trade flows within ASEAN.

Various schemes of industrial cooperation based on concepts of pooling resource and market sharing have been promoted in ASEAN. These are

a. ASEAN Industrial Projects (AIP),
b. ASEAN Industrial Complementation (AIC), and
c. ASEAN Industrial Joint Venture Scheme (AIJV).

ASEAN industrial projects. At the Bali Summit in 1976, the ASEAN Heads of Government adopted the large-scale industrial package approach as recommended in the UN Report. The approach recommended the establishment of large industrial plants to be located in member countries for the production of the region's requirements in specific industrial inputs. This is a convenient arrangement for extending the import-substitution process and to take advantage of the economies of scale in production in the expanded regional market.

To ensure acceptance of the concept, each of the member countries were to be allocated one such project. Each member would in turn provide market support through guaranteed purchase and tariff preferences.

Immediately following the Bali Summit, the ASEAN Economic Ministers met in March 1976 at Kuala Lumpur and designated the first package of AIPs. These were urea plants for Indonesia and Malaysia, a diesel engine project for Singapore, a superphosphate project for the Philippine, and a soda-ash project for Thailand.

These AIPs are large-scale facilities requiring investments of US$300-$400 million (ASEAN, 1985 and are to be owned jointly by the five ASEAN member countries. The host country assumes 60 percent of the equity, and the others subscribe to 10 percent each. It is understood that equity capital would provide about 30 percent and the remaining 70 percent would be raised offshore. In 1977, the then Prime Minister Fukuda of Japan attended the ASEAN summit in Kuala Lumpur and pledged US $1 billion in concessional loans to help finance the AIPs. The pledge was subject to the confirmation of the economic viability of the projects and the support of each project by all ASEAN partners.

The "package deal" approach, though conceptually sound and theoretically appealing, encountered numerous problems in its implementation. Differing national perceptions and economic philosophies, the extent of market support including pricing and other problems such as location, infrastructural support, raw material supply and the availability of labor have delayed implementation. It was not until March 1980 that the Basic Agreement on AIPs was finalized.

The first project to be approved and to get under way was Indonesia's Acheh Fertilizer Project in north Sumatra. The urea plant, which cost US$400 million and 77 percent financed by Japan has a capacity of 520,000 tons per annum (1,000 tons of ammonia and 1,725 tons of urea per day). This was completed in October 1983 and production started the following month. Agreement in principle for the project was relatively easy as the facility had been adopted earlier as a national project by the Indonesian government. A feasibility study by a Japanese team had also been completed. Therefore it only required approval by the other four member countries to qualify as one of the AIPs. However, there were disagreements over the pricing principle of the input. A pricing formula was finally agreed to on the eve of the official opening of the Acheh Urea Project. The Basic Agreement states that "the actual selling price shall be determined by the project company based on the prevailing world prices generally applicable to the ASEAN region subject to floor and ceiling prices in order to maintain profit margins of between 8 and 20 percent." It was what constitutes "prevailing world prices" that was the subject of disagreement. The margins of preference granted AIP products was to be a minimum of 50 percent. Agreement was also reached in

May 1982 that "prevailing world market prices" should be based on landed cost before taking into account tariff preferences.

In the first year of production, Indonesia purchased 240,000 tons, Malaysia 90,000 tons, the Philippines 50,000 tons, Thailand 30,000 tons and the rest went to non-ASEAN markets. Relative to Indonesian productive capacity, the potential market for Indonesian urea in other ASEAN countries is quite small. There was even greater excess capacity in ASEAN when the projected Malaysian urea plant came into production.

The Malaysian ASEAN urea project at Bintulu, Sarawak was incorporated in December 1980 and came into production in 1985. It has a capacity of 1,500 tons of urea and 1,000 tons of ammonia per day. A loan package of about US$220 million, constituting about 70 percent of the cost of the project, was provided by the Fukuda Fund. An additional amount of US$40.5 million was negotiated with Japan due to an increase in project cost. Since the Malaysian urea plant is about the same size as the Indonesian plant. It will be doubtful whether the other ASEAN partners will ever be able to utilize the productive capacities of these two countries.

A US$121 million super-phosphate project was allocated to the Philippines in 1976. It was found to be feasible and accepted by the other member countries. However, in late 1979, the Philippines proposed expanding the project to take advantage of available raw materials and the ASEAN market. This was unacceptable to the other partner countries and was subsequently replaced by an integrated pulp-and-paper project in April 1980. Due to uncertainties related to the availability of raw materials and its viability, a copper fabrication plant was suggested in its place. Uncertain-ties surrounding market arrangements have been raised as well as the issue of how the burden would be shared among ASEAN countries in case non-ASEAN markets did not materialize. Although the Supplementary Agreement was initialled in November 1982 and tenders have been invited for plant construction, the present political, economic and financial crisis in the Philippines have cast doubts on the successful implementation of the project.

Singapore was allocated a diesel engine project in 1976 and feasibility studies showed that a diesel engine plant with engine capacities ranging from one to one thousand horsepower was commercially viable. However Indonesia, which accounts for half of the ASEAN market, objected to the horsepower ranges and wanted to restrict Singapore's project to engines above 500 horsepower so as not to clash with Indonesia's diesel engine production. The restricted horsepower range rendered the Singapore project non-viable as diesel engines above the 500 horsepower range comprised only 20 percent of the ASEAN market. Since no agreement was reached on further proposals of horsepower ranges and market support, Singapore effectively withdrew from the AIP package deal and announced that it would proceed with a national project for diesel engine.

In order to meet the Japanese condition that each project must be supported by all ASEAN members, Singapore agreed at the Sixth AEM meeting in June 1978, to retain a nominal 1 percent of each of the other 4 projects, but without voting rights. By implicit agreement, Singapore would not be required to provide market support to the AIPs.

As a consequence of Singapore's pullout, the other partners divided Singapore's portion among themselves. The equity structure of Indonesia's urea plant was changed with Indonesia and Japan each holding 30 percent shares; Malaysia, Thailand and the Philippines each holding 13; and Singapore a percent share.

When the Supplementary Agreement for Thailand's rock salt-soda ash project was initialled at the 12th AEM meeting in January 1982, Thailand as well as other members, felt that Singapore should provide market support. The matter was unresolved through 1982 and 1983. The first set of AIP package was politically important for ASEAN solidarity, and it was generally felt by the other members, especially Indonesia, that Singapore should come up with an alternative joint-venture project. Significantly, it was at the inauguration of the Acheh Fertilizer Project that Singapore's alternative AIP proposal, a Hepatitis-B vaccine project, was announced.

Singapore's Hepatitis-B vaccine project was officially approved at the 16th AEM meeting in Jakarta in May 1984. The vaccine project was, unlike other AIPs. The original package of AIPs was conceived as large-scale upstream industrial projects to utilize available materials in the member countries, contribute to the increase of food production, increase foreign exchange earnings or save foreign exchange and create employment (Declaration of ASEAN Concord). The Indonesian and Malaysian urea projects, costing US$300-400 million each use domestic supplies of natural gas. The Philippines copper fabrication and Thailand's soda ash projects were similar in size and dependent on local deposits of copper ore and rock salt, respectively. Singapore's vaccine project was estimated to cost between US$6 and US$8 million and was low cost in comparison with the other AIPs. In addition, it produces a health product rather than basic industrial inputs. The Supplementary Agreement governing the project was approved on the basis that the equity of other member countries (including Brunei) was limited to 1 percent. Singapore did not seek concessionary financing from the Fukuda Fund and did not seek to refrain other ASEAN members from establishing similar projects.

The Thai ASEAN rock salt-soda ash project was officially accepted by ASEAN as an AIP in late 1978. The formation of the ASEAN Soda Ash Company in mid-1978 was seen as a positive step. The Thai government and the private sector held a 60 percent equity in the company; Indonesia, Malaysia and the Philippines each held 13 percent and Singapore 1 percent. From the beginning, doubts were raised about the commercial viability of the project although a Canadian consultant report concluded that it was viable. A multitude of technical and marketing problems continue to delay implementation. Problems and doubts relating to the site, feasibility, and source of capital caused further delays.

To complicate matters, Indonesia announced in June 1981, plans to establish a soda ash plant as a national project with a capacity of 200,000 tons per annum (half the size of the Thai AIP) to start production by 1985. Though Indonesia stood by its previous agreement to purchase from the Thai plant, their plans added further uncertainties about the viability of the Thai AIP. As a result, private investors, who were to provide two-thirds of the total Thai equity threatened to withdraw from the scheme and in February 1984, Thailand indefinitely suspended the project. As with the Philippines AIP, one crucial issue which plagued Thailand's AIP was lack of an identified non-ASEAN market for excess production. The Canadian feasibility study had showed that the high cost and low grade of the rock salt would limit the product's export potential. A further study was commissioned to a West German firm to examine the feasibility of either reducing the rock-salt capacity or deleting the rock salt stage entirely and purchasing the required input for the soda ash plant. This study recommended scaling down rock salt production from the originally planned 1.8 million tons a year to only 750,000 tons. The original plans were to supply the soda ash plant 600,000 tons of rock salt to produce 400,000 tons of soda ash a year. The remaining 1.2 million tons were targeted for export to Japan. The study also indicated that the project would be viable with planned output of 300,000 tons of soda ash. Capital costs would be reduced from US$370 to US$267 million. This study has revived interest in the Thai AIP, but its implementation is still uncertain.

ASEAN industrial complementation (AIC). While the AIP seeks to establish new large-scale government initiated industrial projects, the AIC program attempts to promote greater complementarity among existing industries in the region through private initiatives. Under the AIC scheme, member countries would propose to produce complementary products within specific industrial sectors for preferential exchange among themselves. The Basic Agreement governing the scheme was finally concluded in June 1981 after several years of negotiations. The ASEAN Chamber of Commerce and Industry (ASEAN-CCI)--a regional organization comprising members' national chambers of commerce and industry--represents private sector interests and is entrusted with the crucial task of identifying appropriate products for inclusion in the AIC scheme. As provided for in the Basic Agreement of ASEAN Industrial Complementation, the ASEAN-CCI acts as the recognized channel of communication between the governments and the private sectors.

While the basic agreement on the procedure and guidelines were being finalized, negotiations were initiated on two complementation packages in the automotive industry. The first AIC package, on existing automotive products was approved by the AEM in May 1981. A 50 percent across-the-board tariff cut was extended to these products on a most favored nation (MFN) basis by all member countries, whether participating or not. Subsequent revisions were made to the package and the final allocation was approved at the 15th AEM meeting. The meeting also agreed that no further products be added to the first package of existing automotive products. The automotive parts and components included were as follows: diesel engines (80 to 135 horsepower), motorcycle axles and wheel rims for Indonesia; spokes, nipples, drive chassis, timing chains, crown wheels, pinion and seat belts for Malaysia; passenger car body panels, front wheel drive transmissions, transaxles and rear axles (light commercial vehicles and below) for the Philippines; universal joints, seals and v-belts for Singapore; and commercial vehicle (1-ton and above) body panels, drum brakes for trucks, heavy duty shock absorbers, stabilizers, bumpers and trunnion brackets for Thailand (Malaysia: Economic Report 1984/85). Products approved under the AIC scheme were granted exclusivity rights for a period of two years.

The second package which included new automobile parts and components have been deferred pending a review of the guidelines for product identification and allocation. Besides the two packages of automotive products, 30 other AIC proposals have been submitted for consideration but the negotiating process has been extremely time consuming because of data and information requirements for new products.[9] At the 6th AEM meeting in Jakarta in May 1984--no product was acceptable to the respective governments.

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[9] Proposals under the AIC scheme are first negotiated by the private sectors, after which they must obtain government approval in terms of investment promotion and tariff preferences.

The outcome of the AIC scheme can be described as disappointing. The negotiating process is too time consuming, unwieldy and like the AIP, involves issues such as allocation of exclusivity rights which individual members are unwilling to accede. Besides, the basic agreement states that, any intended package would require the participation of at least four of the five member countries. Identifying a range of AIC packages, agreeable to each of the five member countries with their diverse economic structures and production efficiencies, is not an easy task. Even in the first package, there was no consensus. The automotive industry was a poor choice for industrial complementation because of complexities in design, production, and distribution and the fact that most ASEAN countries have embarked upon their own national car projects.

ASEAN industrial joint venture (AIJV). Unhappy with the progress of AIC schemes, the ASEAN-CCI initiated the ASEAN Industrial Joint Venture (AIJV) to provide a more flexible framework for private sector initiatives in promoting regional-based industries. A distinguishing feature is that investors from at least two ASEAN countries can proceed to establish AIJVs with a minimum combined equity of 51 percent in order to qualify for a 50 percent reduction in tariffs within the project participating countries.[10] In the AIC, the equity requirement is left entirely to the country allocated the product. The Basic Agreement was formally signed by the AEM in October 1983 which stated that after four years, all ASEAN member countries must extend the same tariff preferences to all AIJV products on a MFN basis. Hence, exporters of the same product from originally non-participating countries would also enjoy the tariff concessions. The locations of the AIJV projects were left to investors within the participating countries.

In May 1984, the AEM at their 16th meeting approved a list of 21 proposed AIJVs submitted by the ASEAN-CCI as well as proposals from the public sector (nominated by individual ASEAN governments). Most of the ventures were for the manufacture of motorcycle and motorcar parts. The approved AIJVs also included a magnesium clinker plant, a security paper mill and a mini-tractor manufacturing plant. It is perhaps significant that all the AIJVs mentioned were found unsuitable under the AIC scheme. Given the greater flexible framework, the AIJVs may constitute the main area for regional industrial cooperation and more industrial complementation efforts may come under the AIJV scheme.

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[10] This does not apply when more the 50 percent of production is intended for export outside ASEAN or when participating countries in any product agree on a higher equity by non-ASEAN partners.

Evaluation of ASEAN Economic Cooperation

Despite the enthusiasm shown by the private sector, the same problems of market sharing confront the AIJVs as did the AIPs and AIC schemes. It is unlikely that member countries like Indonesia with large domestic markets will be interested in a joint venture and grant preferential tariff rates to other member countries. Most countries would want to locate the joint ventures in their own country. The basic problem is the reluctance of each ASEAN member to grant other partner countries the exclusive rights of production in specific industries or products. The receipt of a specific industrial project seems unequal to the apparent sacrifice of granting to others, the exclusive rights of industrial projects in other areas (Ch'ng, 1985). Since all ASEAN governments have their own ambitious industrial programs, each tries to restrict as much as possible the scope of the regional industrial project designated to other members. Each one wants freedom for future action. As an ASEAN Task Force noted, "ASEAN has been more willing to pool resources rather than share markets."

The report continues

> regional interests are usually accorded priority only if they coincide with, or promote, national interests. This may be due to different perceptions of longer-term benefits which can be derived from industrialization through effective market sharing. Such benefits now go to other industrialized countries which supply the goods that ASEAN would be able to produce, economically if it could achieve effective market sharing.

> In so far as joint investment in industrial production is concerned, the industrial cooperation has been readily accepted. But when markets are involved, cooperation has been hampered by prolonged negotiations. The diesel engine project, which was one of the original AIPs, became nonviable due to difficulties in getting agreement on market support. Negotiations on AIC were protracted in the case of the complementation scheme for the motor vehicle industry because of market sharing. And preferential tariff agreements have had little impact on intra-ASEAN trade because member countries would not be threatened by possible imports from other member countries.
>
> (Reported in Ch'ng, 1985).

ASEAN Machinery for Economic Cooperation

Organizational Structure Before the Bali Summit

In the formal structure agreed upon in 1967 by the Bangkok Declaration, the supreme decision making body was the annual ministerial meeting (AMM) attended by the foreign ministers. The AMM is held on a rotational basis. Directly below this body is the ASEAN standing committee which has responsibility for the day-to-day activities. All reports and recommendations of official ASEAN committees have to be submitted to the standing committee before being considered for approval by the foreign ministers at the AMM. The chairman of the standing committee is usually the foreign minister of the host country. Other members include the ambassadors of the other members accredited to the host country. Below the standing committee were the permanent committees, composed of senior government officials of member countries. At the time of the Bali Summit, there were 11 such committees.

It was not until 1970 that the first permanent committees were formed. Their task was to recommend and implement programs for economic cooperation. These included the special coordinating committee of ASEAN established to foster relations with the European Economic Community (EEC) and the special committee of central banks and monetary authorities. In addition, a number of ad hoc committees, sub-committees and working groups were set up to handle specific issues (e.g., reconstruction of Indo-China, synthetic rubber negotiations and others). National ASEAN secretariates were established in each member country. Most of the ASEAN's activities were then conducted by the national secretariate located within the foreign ministries. A director-general (previously known as secretaries-general) headed each national secretariate and the group was required to prepare the agenda for all standing committee meetings. Effectively, policy coordinations were handled primarily by heads of national ASEAN secretariates. However, their ability at coordination was hampered by a lack of personnel. The secretariates were staffed by foreign service personnel and the technical staff lacked an overall view of ASEAN economic cooperation. Senior officials from other departments were drawn into the respective permanent committees in various areas of specialization.

Since ASEAN was conceived as a non-rigid intergovernmental organization, the ASEAN machinery was likewise, loosely structured with a decentralized system of committees. The administrative burden were equally shared with meetings held on a rotational basis.

From as early as the 5th Ministerial Meeting in April 1972, efforts were made to reappraise whether the ASEAN apparatus was able to cope with the programs that were planned. It was agreed that "an overall review of ASEAN's organizational and procedural framework be undertaken, including considering the need for and desirability of establishing a central secretariate" (R. Irvine, 1982:33).

In November 1975, the ASEAN economic ministers (AEM) endorsed a series of proposals for cooperation in basic commodities, industrial projects, trade and international economic issues.[11] To further promote economic cooperation, the economic ministers recognized and proposed that their meetings should be institutionalized and that an administrative structure under their direct control was essential.

Organizational Structure After the Bali Summit

At the Bali Summit (February 1976), the Heads of Government in the Declaration of ASEAN Concord accepted the entire proposal of the economic ministers for economic cooperation. To ensure its success, meetings of the AEM were institutionalized on a bi-annual basis. The economic ministers were charged to develop the necessary machinery and to formulate, coordinate and implement the economic cooperation programs.

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[11] These closely follow the recommendations of the United Nations Report.

The decision to promote preferential tariff arrangements and joint ASEAN industrial projects came to be regarded as symbols of ASEAN'S success in economic cooperation. The AEM meetings were also attended by ministers from member countries involved in planning, trade, industry, energy, agriculture, transport and communications. In recent years, there has been a trend for ministers in the individual sectors to meet separately. However, their decisions have to be reported to and ratified at the AEM meetings.

The Bali Summit also agreed to the establishment of the ASEAN Secretariate in Jakarta. The need for a regular review of ASEAN's organizational structure was recognized as necessary to improve ASEAN its effectiveness. However, because of apprehensions of some members to possible supranational powers that may accrue to it, the ASEAN Secretariate was never given the responsibility or adequate resources to play an effective role within the ASEAN framework.

At the AEM's second meeting in Kuala Lumpur in March 1976 immediately following the Bali Summit, the economic ministers agreed that the new economic committees should be under their control rather than the foreign ministers. They recommended the abolition of the old permanent committees which had previously dealt with economic matters.[12] These developments, as expected, opened an intense debate on the general lines of responsibility within the formal ASEAN framework and the role of the ASEAN Secretariate.

Thus, there was pressure from the foreign ministries to retain the functions of policy planning, coordination and implementation and to limit the ASEAN Secretariate to a more general coordination and administrative role.

At the third AEM meeting in Manila in January 1977, the AEM proposed the establishment of five economic committees and each member country was assigned to host a committee. Indonesia was to host the Committee on Food and Agriculture (COFAF), Malaysia the Committee on Transport and Communications (COTAC), the Philippines the Committee on Industries, Minerals and Energy (COIME), Singapore the Committee on Trade and Tourism (COTT) and Thailand the Committee on Finance and Banking (COFAB). The host country would designate the chairman, provide the technical staff and convene the meetings. These economic committees, were in turn, served by sub-committees, expert groups, ad hoc working groups and other subsidiaries. For example, COFAF has coordinating groups in livestock, food handling, and forestry. COTT has a sub-committee on tourism. COTAC has sub-committees on land transportation, shipping and ports, civil aviation and related services and posts and telecommunications. COIME has expert groups on minerals, automotive industry, pulp and paper industries and on the specific ASEAN industrial projects.

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[12] The Indonesian government proposed that each member country should accredit a full-time ambassador to the ASEAN Secretariate. These ambassadors would, with the ASEAN Secretary-General, constitute ASEAN's senior policy planning and management body. The Indonesian proposal envisaged an "ASEAN Council of Ministers" based on that of the EEC. (D. Irvine, 1982, p. 57).

At their 10th AMM meeting in July 1977, the ASEAN foreign ministers for all countries except Indonesia, rejected the AEM's proposals and argued in favor of the ASEAN foreign ministries remaining the principal policy-making body of ASEAN.

A compromise decision was finally reached by the ASEAN heads of government in August 1977. It was agreed that the foreign ministers acting through the AMM, would remain the principal coordinator of overall ASEAN policy. The economic ministers were given full autonomy on economic matters but were to keep the foreign ministers informed of their decisions through the ASEAN Secretariate. Other ministerial groupings could report directly to the Heads of Government if they so wished. The Heads of Government would meet from time to time to review progress and approve any new guidelines.[13] The old permanent committees were replaced by the five economic committees responsible to the economic ministers. Four new committees (social and development, culture and information, science and technology and budget) were formed. These committees were responsible to the foreign ministers, through the standing committee.

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[13] The third summit is scheduled to be held in December 1987 in Manila to review, among other things, progress in economic cooperation.

The ASEAN secretariate functions as a channel of communication between the economic and political factions.[14] It is not directly involved in the work of the committees. It only plays a supportive role in monitoring, coordinating and assisting in cooperation activities. It also facilitates communication with third countries and organizations and agencies such as those of the United Nations. Reports of the AEM meetings and their committees are transmitted to the ASEAN Secretariate, which in turn passes them to the ASEAN standing committee and foreign ministers. The standing committee may only comment on the political aspects of the reports (Castro, 1982:80).

The decentralized organizational structure that evolved proved adequate for a while. But with increased ASEAN activity, effective economic cooperation required more technical expertise. A senior (political) officials meeting on the restructuring of ASEAN machinery was convened in March 1981 at Bali but nothing came of it. The committee concluded that there was no need to alter the basic structure of the existing machinery. Subsequently, a working group was created to make recommendations on the strengthening of the ASEAN secretariate. After several meetings, this group did not recommend expanding the Secretariate.

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[14] It was reported by Castro (1980) that the various ministerial groups are equal in status and independent of each other. But the fact remains that the AMM is still the coordinator of ASEAN activities.

At the same time, the question of organizational restructuring was taken up by the AEM. Although the AEM structure was institutionalized by the second Heads of Government meeting in August 1977, uncertainty remained in its relationship to the AMM. Since the AEM may report directly to the heads of government and is given full autonomy on economic matters, the foreign ministers' role as coordinator of ASEAN created questions in the structural hierarchy. Since the AEM as instituted was a body of ministers from member countries involved in economic matters, there has been a trend for ministers in the other portfolios to meet separately in recent years. Even though the decisions of these sectoral meetings have to be reported and ratified by the AEM meeting, the emergence of these vertically integrated ministerial structures at times makes trans-sectoral coordination less than perfect--especially when national coordination is lacking. Other concerns of the AEM included the strengthening of the ASEAN Secretariate to improve administrative efficiency of ASEAN economic cooperation and the structure of the economic committees (Ch'ng, 1985). Given these issues and concerns, the AEM at the 12th meeting, failed to endorse the concept of an ASEAN Council of Ministers. An attempt to bring the trade and industry under the purview of a "super-economic committee" also failed. The only agreement in strengthening the ASEAN Secretariate was the expansion of the Secretariate's economic bureau.

The forum to press for organizational reform shifted to the ASEAN task force, made up of a group of 15 independent experts from the academic, professional, public and private sectors. The terms of reference to the task force were "to review and appraise the progress of ASEAN, identify policy measures for the attainment of ASEAN goals, and define new directions for future ASEAN cooperation." The formation of the task force was proposed at the 15th AMM in June 1985. The report of the task force was submitted to the 16th AMM a year later. On structural reforms, the task force recommended that an ASEAN council of ministers be established to incorporate the AMM, AEM and other ministerial meetings as the top policy and decision making body of ASEAN. The standing committee was to be replaced by a committee of permanent representatives (as in the EEC) to be based in Jakarta, and reporting to the council of ministers. All the eight functional committees would remain decentralized, the chairmanship rotate among themselves every two years and they would report to the committee of permanent representatives. The senior officials meeting (SOM) which meets outside the formal ASEAN framework to discuss political matters, was to be replaced by a committee on political cooperation.

In addition, an ASEAN advisory committee on policy studies was to be constituted to provide both short-term and long-term perspectives on issues important to the progress and development of ASEAN. To service the various bodies adequately, the ASEAN

Secretariate was to be strengthened both in terms of increased responsibility, personnel and technical resources.

The recommendations were referred to the AEM at their 16th meeting in May 1984 before a final decision was made at the 17th AMM in July 1984. The recommendations of the task force on organizational reform was not accepted by the AMM although the AMM did however agree on the need to strengthen the ASEAN secretariate among other things. The decision of the AMM reflected a cautious approach towards organizational reform.

Private Sector Participation

The ASEAN chambers of commerce and industry (ASEAN-CCI) was formed when the chambers of commerce and industry from the five ASEAN member countries met in Jakarta in April 1972.[15]

The objectives of the ASEAN-CCI are:

a. to effect private business cooperation in keeping with the objectives of ASEAN,

b. to accelerate economic development in the region through joint efforts,

c. to foster closer ties between members and mutual assistance in matters of common interest, and

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[15] The five national chambers of ASEAN comprise the Kamar Dagang dan Industri Indonesia (KADIN), The National Chamber of Commerce and Industry of Malaysia (NCCIM), the Philippines Chamber of Commerce and Industry (PCCI), the Singapore Federation of Chambers of Commerce and Industry (SFCCI) and the Joint Standing Committee on Commerce, Industry and Banking of Thailand (JSCCIB).

d. to maintain closer relations and cooperation with regional and international organizations having similar aims and objectives.

The ASEAN-CCI council consists of 2 representatives from each member country. The president of the ASEAN-CCI has a two year term. The annual meetings rotate among the ASEAN capitals. A provision of the basic agreement of ASEAN industrial complementation entrusts the ASEAN-CCI with the crucial tasks of identifying appropriate products or industries for inclusion in the ASEAN industrial complementation (AIC) program and securing approvals by the appropriate ASEAN governing bodies. The ASEAN-CCI is therefore charged with the responsibility of acting as official spokesman for the private sector in matters of industrial complementation.

The structure of the ASEAN-CCI is organized such that the various working groups match with the corresponding ASEAN government bodies. Since 1976, the channels and levels of communication have increased.

The organizational structure of the ASEAN-CCI is four-tiered. The council is the highest level. It governs and a administers the ASEAN-CCI. The next level consists of various working groups. ASEAN-CCI activities have revolved principally around the working groups in trade (WGIT), industrial complementation (WGIC) and food, agriculture and forestry (WGFAF). Below this are the regional industry and commodity clubs. By the early 1980s, industry clubs had been formed to formulate proposals for cooperation. These included agricultural machinery, automotive, chemicals, cement, ceramics, electrical and electronic, food processing, furniture, glass, iron and steel, non-ferrous metal, pharmaceuticals, plywood, pulp and paper, rubber, and textiles. The regional commodity clubs involve coffee, livestock, pepper and sugar. The fourth level is made up of national industry and commodity clubs--the national components of the regional club.

The institutional machinery for industry complementation is both complex and time consuming. The process requires interactions between the ASEAN-CCI and the ASEAN governments. Proposals for industrial complementation are first initiated by their respective national industry clubs and submitted to regional industry clubs for consideration. All recommendations emanating from the regional industry clubs are forwarded through the WGIC to the council for endorsement. All council decisions are based on the full consensus of all its constituent members. The secretary-general of the ASEAN-CCI then transmits the AIC proposals to the chairman of COIME, the government committee responsible for approval of AIC projects. Thus the process is both cumbersome and time consuming. A project takes about a year from conception to the stage of approval for recommendation at the private sector level, followed by another year for consideration and approval by COIME and the AEM.

By 1982, some 30 AIC proposals had been made to the regional clubs for consideration, but only 2 packages involving automobile parts and components had been approved by the ASEAN-CCI. However, at the 16th AEM meeting held in Jakarta in May 1984, no further AIC packages were approved. At present, discussions with the government committees on communications and transport (COTT), finance and banking (COFAB), trade and tourism (COTT) are conducted through the ASEAN Shippers' Council, the ASEAN Banking Council and ASEAN Tourism and Travel Associations rather than ASEAN-CCI. The ASEAN-CCI Council has intentions of creating working groups on banking, shipping and tourism and such groups are in various stages of being established.

External ASEAN Economic Cooperation and External Relations

External economic relations were not accorded priority during ASEAN's formative years after the Bangkok Declaration in 1967. This was understandable as the early years of ASEAN were devoted to the development of a mutual awareness and understanding among the members countries. Over the years, ASEAN has adopted a unified approach to the many regional and international economic issues. One the benefits of a unified approach is the increased bargaining position it commands in dealings with third countries. It is in this area that ASEAN has achieved notable success relative to intra-ASEAN economic cooperation. The success of ASEAN as a regional organization as perceived by the world is derived not so much from regional economic cooperation but in their concerted and joint approach in foreign economic relations. This joint approach to international commodity problems and other international economic issues of common interest was emphasized in the Declaration of ASEAN Concord concluded at the Bali Summit in 1976.

In the 1970s, ASEAN formalized discussions with the EEC, Australia, Japan, Canada, New Zealand and the United States as well as with the United Nations Development and Planning (UNDP) and Economic and Social Commission for Asia and the Pacific (ESCAP).

ASEAN-EEC Economic Relations[16]

ASEAN's interest in establishing economic relations with the EEC is due to the community's importance to ASEAN in trade and investment. A special coordination committee of ASEAN nations (SCCAN) was set up in 1972 to provide links with the EEC. In 1974, a joint ASEAN-EEC study group was established. At a higher level, the ASEAN Brussels committee, consisting of diplomatic representatives of ASEAN countries, held a series of meetings with the EEC's committee of permanent representatives and this led to the 1st ASEAN-EEC ministerial meeting (AEMM) in Brussels in November 1979. The two parties agreed to promote trade, investment, industrial cooperation and transfer of technology. A five-year ASEAN-EEC cooperation agreement to formalize a framework for cooperation was signed in Kuala Lumpur at the 2nd

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[16] For a detailed account of ASEAN's International Relations--economic as well as political--see Gyngell, 1982.

AEMM meeting in March 1980. This agreement included provisions for a joint cooperation committee.

The 4th AEMM meeting was held in Bangkok in March 1983 and the 5th in Dublin in November 1984. Economic matters such as trade promotion and reciprocal access and ASEAN's request for greater EEC investment were discussed.

ASEAN-Australia Economic Relations

Australia was the first extraregional country to establish relations with ASEAN on a multilateral basis. While Australia is not a major trading partner for ASEAN, it has considerable interest in the region's economic and political stability. Early ASEAN-Australian economic relations placed emphasis on trade and development assistance.

The ASEAN-Australia dialogue is known as the Forum. Preliminary meetings were held in Canberra in May 1973 and Bangkok in January 1974. The ASEAN representatives indicated their interests in economic cooperation with Australia on a joint basis. In Canberra in April 1974, a meeting of the secretaries general of ASEAN member countries' national secretariate and the Australian foreign minister, the forum was formally inaugurated. Australia agreed to contribute A$5 million for joint ASEAN projects and provide training assistance for ASEAN experts engaged in the projects. This initial multilateral commitment of development assistance later came under the Australia-ASEAN economic cooperation program (AAECP). Since 1974, the AAECP has committed A$93.5 million in ASEAN Projects (Malaysia: Economic Report 1985/86). The AAECP has been involved in the development of low cost protein-rich foods from local sources (ASEAN Protein Project); studies on food handling, transportation and storing of grains, meat and cereals; assistance to energy, education, population program, and regional animal quarantine; and a special visits scheme to increase contacts between Australia and various ASEAN member countries. In addition, agreements were reached on a trade investment promotion program and the establishment of the ASEAN-Australia consultative meetings (AACM). Private sector links were also developed when an ASEAN-Australia business conference was inaugurated in Kuala Lumpur in June 1980.

Despite ASEAN success in obtaining funding from Australia for development assistance, ASEAN's efforts to increase market access for her commodities have been unsuccessful. Australia has never been a major trading partner of ASEAN or vice versa. Nevertherless, one of the more serious issues of contentions was the consistent unfavorable trade balance with Australia--especially with the Philippines and Malaysia. Their imbalances were large relative to other trading partners with whom their trade is unfavorable. Since ASEAN member countries are open export-led economies, they have continued to rely on export promotion as an avenue toward economic development and are concern about Australia's protectionist policies. Further, ASEAN does not view Australian sponsored research and development assistance as an acceptable substitute for trade liberalization

(10th AEM Meeting in Bangkok in October 1980), and ASEAN has urged Australia to make serious efforts to improve market access for ASEAN products (Malaysia: Economic Report 1984/85:41).

In other international issues, a major dispute over Australia's international civil aviation policy involving ASEAN's landing rights. Regional security issues in late 1978 over the refugee crisis and the conflict in Kampuchea were also resolved.

ASEAN-Japan Economic Relations

ASEAN dialogue with Japan dates back to the early 1970s when multilateral discussions were held to discuss the adverse effects of Japan's expanding synthetic rubber production on the natural rubber industry of ASEAN nations. The dialogue sessions were gradually expanded until it was formalized as the ASEAN-Japan Forum in 1977. Forums are held annually. At a higher level, meetings between ASEAN-Japan economic ministers are held from time to time. The last meeting of the ASEAN-Japan economic ministers was held in Tokyo in June 1985. Items of mutual interests have been discussed. These include trade, commodities, investments, technology transfers and development assistance in trade and investment promotion, shipping, agriculture, energy, human resource development and industrial cooperation research.

Japan's promise of US$1 billion to assist in financing the ASEAN industrial projects was mentioned earlier, and so far, the Indonesian and Malaysian AIPs have availed themselves of this fund. ASEAN has often voiced concern over the restrictive market access to Japan for its agricultural and manufactured products and has called for wider access and improvement. Japan has since met some of these demands by reducing tariffs on a number of items, including bananas, palm oil, coconut oil, shrimp, canned pineapples and chicken. Quotas for industrial products under the generalized system of preferences were increased about 50 percent in 1983. However. negotiations on the stabilization of export earnings (Stabex) have not met much progress.

ASEAN-US Economic Relations

ASEAN-US dialogue has gradually expanded since 1977. Traditional issues on market access, trade, commodities and investment have been discussed and development assistance in other areas have been approved. Projects have included an agricultural development planning center (ADPC) in Thailand; the plant quarantine training center and institute (PLANTI) in Malaysia; a watershed conservation and management research project; training in solar pumping, energy conservation and coal technology, scholarships at the Asian Institute of Technology in Bangkok, and curriculum development. At the 5th ASEAN-US dialogue, the United States gave a US$2.75 million grant to COIME to fund an ASEAN Small and Medium Business Improvement Program. At the 6th dialogue, the United States agreed to cooperate with ASEAN to address the problems of market access, falling commodity prices and the persistent debt problem.

As a result of joint action with dialogue partners, the ASEAN countries are increasingly aware of the efficacy of joint action as a means of pursuing economic objectives.

Decision-Making in ASEAN

One of the most important guiding principles which has contributed to the success of ASEAN is the way decisions are made in negotiations and meetings among the member countries. Decision-making is based on the principle of unanimity and consensus. No single member can impose its will upon the others. This consensus approach is probably the cause for the low implementation rates of ASEAN proposals and programs for economic cooperation. The decision-making process by consensus is cumbersome and time consuming and gives rise to lengthy negotiations and consultations. Since the process of economic cooperation among ASEAN countries is open-ended with no time frame for dismantling internal tariffs or other objectives, the pace of economic cooperation also has to be acceptable to all member countries.

Singapore and the Philippines have always promoted a more ambitious program of economic cooperation, particularly with regard to the liberalization of trade than Indonesia would be expected to support. Singapore has wanted to pursue a greater liberalization of trade through bilateral arrangements with the Philippines and Thailand, but was persuaded to accept the level of trade liberalization to which the others could commit themselves (Ariff, 1980). Singapore's failure to obtain approval to build its planned diesel engine provides an example of the problems of negotiating AIPs. In 1980, in an attempt to break the deadlock in the negotiations, Singapore suggested that "when four agree and one does not object, this can be considered as consensus and the other four can proceed . . . an 'ASEAN five minus one' can benefit the participating four without damaging the abstaining one." (Far East Economic Review, Asia Yearbook 1984).

D. Irvine (1982:62) commented that formal acceptance of such a fundamental change to one of ASEAN's most important guiding principles would imply some loosening of the original ideals of ASEAN cohesion. However, this need not weaken ASEAN. Rather it is an open recognition of the very difficult nature of the negotiations considering the diverse economic characteristics of Singapore and the other members and could introduce some flexibility into ASEAN cooperation without altering broader ideals.

The consensus mechanism does have some advantages. The distributive issue, associated with virtually all economic cooperation programs has to be considered by all parties and no single member needs to bear disproportionate sacrifices. Consensus facilitates implementation since differences are resolved in the decision processes.

ASEAN Cooperation in Other Areas

It is in the other areas of cooperation, including agriculture, that ASEAN regional cooperation, has been most successful. These programs of cooperation, which are development or technical in nature, are not as well publicized as the industrial cooperation. Programs of cooperation in finance and banking, food, agriculture and forestry, minerals and energy, transport and communications and tourism have usually been approved as national interests of these projects seldom conflict with regional interests. Compared with industrial cooperation where market sharing has always been an issue and domestic markets are jealously (and zealously) guarded, cooperation in these areas are not contentious. At the same time, benefits are less tangible in the short-run.

Cooperation in finance and banking extends to customs, tax matters and insurance. An ASEAN customs code of conduct was signed in 1983. This code detailed the basic principles on classification, valuation techniques and related matters. Agreements have been reached on the avoidance of double taxation between some ASEAN member countries. In 1982, an ASEAN reinsurance pool was launched to facilitate an exchange of reinsurance business among regional insurers. The ASEAN insurance commissioners have taken steps to harmonize insurance laws.

ASEAN's central banks and monetary authorities concluded an agreement in 1977 on an ASEAN swap arrangement amounting to US$100 million to assist any member in bridging temporary liquidity problems. The original amount of US$100 million was increased to US$420 million in 1978 and renewed for another 5 years in 1982. The ASEAN bankers' council, in association with the ASEAN-CCI working group on banking, was responsible in 1978 for setting up an ASEAN finance corporation to facilitate trade and investment. Recommendations have been made to develop financial instruments to promote intra-ASEAN trade.

An ASEAN minerals cooperation plan, formulated in 1981, provides a framework for cooperation in various projects. Current projects under implementation include the beneficiation and marketing of kaolin and barite, mine safety, mining technology and exploration. In energy cooperation, an ASEAN emergency petroleum sharing scheme has been in existence since 1977. An agreement on the ASEAN energy security reserve scheme is currently in the process of formulation. Other projects, including coal and power utilities, have been formulated for implementation.

In transport and communication, an integrated work program groups major projects in four areas of shipping and ports, land transportation, civil aviation and related services, and ports and telecommunications. Projects for implementation are prioritized. Since 1977, over 120 projects have been identified and many have been implemented and are in various stages of completion. Implemented projects dealing with postal matters and telecommunications include business reply service, intercountry remittance service, use of the Palapa (Indonesian satellite) system and the ASEAN submarine cable project.

An agreement on the recognition of domestic driving licenses in ASEAN was reached in 1985. In civil aviation, an ASEAN circle fare and ASEAN promotional fare have been introduced to promote intraregional tourism. The establishment of an ASEAN liner service is under study. Arrangements to enable citizens of member countries to stay for a minimum of two weeks without a visa have facilitated intra-ASEAN tourism.

CHAPTER VII
ASEAN COOPERATION IN AGRICULTURE[1]

Experiences in economic cooperation among developing countries have shown that whatever their stage of development, the main emphasis has been on the promotion of industrial development. Little attention has been paid to further cooperation in agriculture in the integration process. Nevertheless, in terms of employment, contribution to national output and share of external trade, agriculture ranks as a major sectors in four of the ASEAN economies (Table 7.1).[2]

ASEAN Cooperation in Food and Agriculture: Past and Present

In August 1979, the ASEAN agricultural ministers announced an "ASEAN common agricultural policy" (Wells, 1980). The term has nothing in common with the common agriculture policy (CAP) of the European Community (EC). CAP essentially protects domestic agriculture against external competition through market

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[1] A more comprehensive account of this chapter was presented in a paper, "ASEAN Co-operation in Food and Agriculture: Looking Back/Looking Forward" by the author.

[2] The ASEAN economies, including the agriculture sector, have been discussed in an earlier chapter.

Table 7.1 THE IMPORTANCE OF AGRICULTURE IN ASEAN, 1983

Country	% Ag. pop. in total Population	% Contribution to Gross Domestic Product*	% Share of Merchandise Exports	% Share of Total Imports Financed by Ag. Exports
	- - - - - - - - - -	percentage	- - - - - - - - - - - -	
Brunei	7.0	1	-	-
Indonesia	56.5	26	12	
Malaysia	44.5	21	43	27
Philippines	43.6	25	36	29
Singapore	2.0	1	13	5
Thailand	73.9	20	62	33

* 1984 values

Sources: a. Selected Indicators of Food and Agriculture Development in Asia-Pacific Region, 1974-84. FAO, Bangkok, 1985.
b. World Development Report, 1986.
c. State of Food and Agriculture, FAO, Rome, 1984.

interventions and price supports. The CAP of ASEAN, however, is based mainly on technical cooperation and development. Regional cooperation in agriculture has in the past been confined to pest and disease control, technical training, agriculture research and food security.

A major achievement in food and agriculture cooperation was the establishment of the ASEAN food security reserve (AFSR) system in 1979. The agreement provides a framework for the coordination of national food reserves, arrangements for mutual support in emergencies, and the establishment of a food information and early warning system. Under the scheme, an ASEAN emergency rice reserve of 50,000 tones was initially established.[3] The reserves are to be maintained by member countries over and above their national reserves. The individual contributions are Thailand, 15,000 tons; Indonesia, 12,000 tons; Philippines, 12,000 tons; Malaysia, 6,000 tons and Singapore, 5,000 tons.

Besides this scheme, other projects have been implemented with foreign assistance. These included a regional seed technology program, an animal quarantine improvement program and the eradication of foot and mouth disease. A food handling bureau, a plant quarantine training center and institute, an agriculture development and training center and the ASEAN forest tree seed center have been established. Also, a study on the supply and demand for food and other strategic agricultural products has been done.

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[3] The size of the ASFR has been questioned by economists (see Tamin, 1979). However, COFAF is undertaking a study on the total reserve requirement in the ASEAN emergency food reserve.

Among the fisheries projects that have been implemented are an evaluation of fish stock, an ASEAN aquaculture coordination and development project, a postharvest fisheries technology project and training in monitoring, control, and surveillance of fisheries in exclusive economic zones. In forestry, the projects include the establishment of an ASEAN timber technology center, a forest tree improvement center, an ASEAN packaging research design and development center, an ASEAN institute of forest management, standardization of grading rules and the specification of timber and the ASEAN forest for rural community development center. Other projects approved include phase two of the ASEAN agriculture development and planning center, the setting up of an ASEAN center for development of agriculture cooperatives and the ASEAN swamp buffalo research and development program.

Case for Inclusion of Agriculture

In view of the importance of agriculture in Asean economies, its exclusion would cause distortions in resource allocation. If agriculture development is accorded high priority in the economic development of the individual member countries, why should it be excluded within a regional context? Economic development studies have suggested that it can be costly for developing countries to overemphasize the importance of industrialization and neglect the agriculture sector.

Many developing countries face mounting food imports yet experience unused and underused resources in agriculture (e.g., idle land in Malaysia). Other areas like the Indonesian island of Java may face mounting pressure on land resources (Birowo and Prabowo, 1985). Regional integration and the prospects of an enlarged and assured market could induce a more rational utilization of resources for food production. The prospects for increased food security are certainly better in a regional rather than a national framework through synchronizations in supply, regional stockpiling and other stabilization schemes (Koester, 1985 and Chiew, 1985 and 1986).

One of the major drawbacks of integration among developing countries is the distributive issue. A more equal distribution of benefits was one of the reasons for the inclusion of agriculture in the European Community (Swann, 1972). Agriculture was included because a program of economic integration without agriculture would stand little chance of success because of the delicate balance of national interests of the contracting parties. For West Germany, the prospects of free trade in industrial goods were good, particularly in the French market. As for France, because of her relatively more efficient agriculture sector, especially in grains, the prospects of making substantial inroads into the West German market was also promising. The demand to incorporate agriculture in the European Community was therefore purported to be on purely distributive grounds.

The incorporation of agriculture in regional integration and measures to permit the exploitation of comparative advantages may very well provide relatively greater benefits to the less developed countries in a regional grouping. There is evidence to suggest that the inclusion of agriculture in most industry-biased economic integration schemes could possibly alleviate some of the distributional problems which have severely limited the progress of economic integration among developing countries (Cappi et al., 1978). The principal sources of economic gains to participating members in an economic integration arrangement were reviewed earlier. It is generally believed that regional cooperation is more beneficial to industry than to agriculture because of economies of scale and more specialized manufacturing (FAO, 1976). However, opportunities for economies of scale do exist for certain agriculture processing industries and agrobased manufacturing such as fertilizers, pesticides, agricultural machinery, animal feeds and vaccines.

The benefits of external economies in a regional approach in agriculture could be substantial--e.g., in regional coordination of agricultural research and human resource development, technical assistance and funding by third countries, infrastructural improvements in transport and communications, marketing, food handling, and storage facilities. External economies could also apply to freight and insurance negotiations with international carriers, trade promotions and efforts to gain market access in major developed countries.

ASEAN is a major world producer of several primary commodities such as including rubber, palm oil and cocoa. The prospects of terms-of-trade gains are much more favorable through a coordinated regional group effort in international trade negotiations. While concerted actions to improve the terms of trade need not necessarily be confined to a regional integration framework, it provides a strong platform for initiating and coordinating moves to counter common commodity problems.

Obstacles to Further Economic Cooperation in ASEAN

Not all regional gains from economic integration are necessarily beneficial from a national perspective. Some will induce negative effects on at least some of the members.

The agriculture sector is protected by almost all countries in the world and trade restrictions in food commodities are the norm rather than the exception. A policy of protection and high internal prices for food products have continued in most developed economies despite dramatic increases in productivity over the past decades. Justifications for such policies include the need to safeguard national security, to improve balance of payments and to redistribute income in favor of farm groups. In the developing countries, agriculture is similarly protected to a high degree for the same reasons. In addition, protection is used to counter problems of unemployment due to high population growth and an inefficient agriculture sector (World Bank, 1986).

Agriculture in ASEAN is characterized by a structural and technological dualism. At one extreme is the plantation sector which produces commodities export. At the other extreme are the traditional smallholders producing food crops. If agriculture trade is liberalized within the region, the increased competition will encourage greater efficiency and productivity. A liberalized trade regime and open environment will cause shifts in production structures. These shifts may cause social problems in resource dislocation and relocation and be contrary to short-run national interests. Income distribution within and between countries may be further skewed as commercial export-oriented agriculture, with its superior technology, capital availability and productivity, takes advantage of new opportunities in an expanded market. The distributive problems created are difficult to correct. Generally, the agriculture commodities produced (and protected) by the subsistence sector in one country are often produced more efficiently by larger sized farm units--especially if only market forces are operative. Trade liberalization in agriculture may make smallholders relatively worse off. Given the high population growth and existing rural unemployment, integration would likely hasten rural migration. Structural differences and market imperfections protect the small holders and politically limit the free trade argument.[4]

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[4] These problems as experience by the implementation of the CAP in the EC are related by Gaese (1975).

There is a lack of first hand experience in agriculture cooperation relative to cooperation in industries in integration arrangements among less developed countries. Consequently, uncertainties exist as to the approach and the effects of including agriculture (FAO, 1976).

Agriculture (as well as industries) among member countries of ASEAN is competitive rather than complementary. Many economists have alluded to the similarity in factor endowments and climatic conditions among ASEAN countries. The potential for gains from intraregional agricultural trade may be low if ASEAN countries exhibit few complementarities among their agricultural sectors (Chi'en, 1978).

Empirical results have shown the limited potential of intra-ASEAN trade with the present production structure among the ASEAN economies (Chi'en, 1978 and Chiew and Langham, 1985). However, despite the apparent competitive structure, in the vast geographical regions of ASEAN, there do exist microclimatic and seasonal differences. Intraregional trade can thus be expanded in commodities such as fruits and vegetables which can be grown or are available in certain seasons in one or some of the member countries but not in others.

On food security, it is unlikely that individual governments are willing to increase dependence on member countries. It is the responsibility of each government to ensure an adequate level of food supplies for its population, and governments are reluctant to delegate this responsibility to integrated partners.

Other difficulties include an inadequate and high cost transportation and communication network and a lack of market information.[5] Furthermore, a part of agriculture is outside the money or exchange economy and therefore outside any immediate integration influences.

Differences exist among member states in product and input price levels, in nonprice policies and in the role of the state in procurement of agriculture supplies. The product price levels usually vary widely and they often tend to be "political" prices. To increase agriculture productivity, most ASEAN countries have subsidized the use of fertilizers. Malaysia fully subsidizes farmers up to a maximum of 2.4 hectares. Indonesia and Thailand subsidized 55 and 10 percent respectively (Chiew, 1986). Besides input subsidies, all the ASEAN countries also operate a paddy price support system. Market intervention among ASEAN countries in rice production is most severe in Malaysia, followed by Indonesia, the Philippines and Thailand (Chew and Fatimah, forthcoming).

Most countries, and ASEAN is no exception, do not have the capacity to liberalize trade to a significant extent and also protect the farmers from price fluctuations. It is also difficult to protect less efficient domestic high cost farmers from more efficient intra-ASEAN suppliers. The integration experiences of the EC have shown that trade measures are insufficient to improve agricultural structures to the extent and at the pace required for meaningful regional integration of agriculture.

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[5] The importance of transport is discussed in a later section.

Economic integration experiences have shown that industrialization has been vigorously pursued by developing countries. However, inward-looking import substitution policies inevitably discriminate against manufactured and primary exports through the explicit and implicit taxation of export activities (Balassa, 1980). Protection by way of import prohibitions encourages inefficient high cost production in manufacturing industries, higher taxes and an over-valued exchange rate. These consequences also discourage the production of primary products. High cost agriculture inputs due to an inefficient and protected industries and relatively low prices for products due to taxation policies are common features in many developing countries. Import protection adversely affects the terms of trade against primary production, penalizes the earnings of the agriculture sector, and may lead to a decline in export market shares.

Despite these difficulties, arguments of social equity and political realism for the inclusion of agriculture in ASEAN are strong, as they were for the EC. Any joint action to improve the standard of living of people should include the relatively backward agriculture sector. It would be unethical to exclude the large sections of the population dependent on agriculture from the benefits of integration. In fact, to the detriment of agriculture, the costs of manufactured agriculture inputs are often initially increased by integration schemes. Regional integration is a demanding long term process, politically as well as economically. Therefore a regional integration scheme which has the support of all sectors of the economy would stand a better chance of success.

A Pragmatic Approach to Incorporate Agriculture

If a decision is made to consider integrating agriculture in a broader economic cooperation framework, a fundamental question arises as to what the approach is appropriate for ASEAN. Is complete integration of all the national agriculture sectors or a limited approach preferable?

A complete integration (or global) approach would require the whole of agriculture and not one or more of its subsectors to be brought into the integration process. Two alternative ways (FAO, 1976) to achieve complete integration have been proposed. These are:

a. to liberalize trade within the region via trade/price mechanisms, or

b. to implement a comprehensive long-term plan for integrative development, through institutions and interventions which will encompass all major aspects of inputs to and output of agriculture and which will ensure that national plans and policies are conceived and carried out in a regional context.

A global approach has an advantage in the economic rationality of resource allocation. Whether the global approach is pursued through an intervention policy or through the free market, resource allocation is determined within the context of the whole agriculture sector. A global approach via free market mechanism is however politically and socially unacceptable among ASEAN members for the distributive reasons already mentioned.

The alternative global approach through a comprehensive set of intervention mechanisms is theoretically preferable, but it too raises a number of practical problems. It requires supranational decision-making, regional as well as national planning and an administrative capability which is lacking in ASEAN at the present time. Economic cooperation has not advanced to a stage where member countries are willing to forgo decision-making in favor of a supranational body. Intervention is also very costly especially when there is surplus production as shown by the experience of the EEC's CAP.

If ASEAN chooses to include the agricultural sectors in its integration schemes, a selective approach has appeal. Regional policy decisions can be initiated with a predetermined time frame to integrate a few commodities or inputs of economic importance and which are less sensitive politically. Additional commodities or subsectors can gradually be incorporated within the framework of a longer-term global perspective for regional agriculture.

Given the difficulties of integrating agriculture, what then are the prospects of incorporating agriculture in ASEAN? Unlike industrial cooperation where new products or industries can be allocated to one or a few countries, the situation for agriculture is different. Completely new products are unlikely in agriculture. Most of the ASEAN members presently produce or are capable of producing a similar range of commodities. In the short-run, increases in intraregional trade in agriculture should only be confined to complementary products. By matching national surpluses and deficits of member countries, any agriculture commodity in short supply in any member should be sourced from regional partners at competitive price) before considering importation from outside the region.

To accelerate agricultural trade within the region, a number of approaches can be attempted. Firstly, both short-term and medium-term bilateral agreements can be entered between food deficit and surplus members to guarantee access for supplies in negotiated quantities and prices. A member country may so choose to reduce its existing self-sufficiency level if supplies can be assured from another regional partner. Existing production may be reduced in favor of another crop which has a greater comparative advantage. For example Malaysia, whose self-sufficiency ratios in rice have fluctuated from to 65 to 85 percent, has justifiably decided to reduce self sufficiency from 55 to 65 percent. Emphasis will now be on increasing productivity in the main granary areas which have better infrastructure and other support services. Farmers in the other marginal areas are encouraged to divert out of padi production. In terms of food security, Malaysia should perhaps only reduce production up to a critical or threshold level and maintain a supply or production capability so as to be able to increase production in a short time should the situation warrant. Secondly, extraregional imports should be limited if regional supplies are available at competitive prices. Thirdly, there should be improved market information and monitoring of food production and surpluses and deficits among member countries.[6] Any shortfall in a member country could be contracted from food surplus partner countries. Some commodities, (such as rice, maize and sugar) which are surplus in some ASEAN countries, yet deficit in others, could be used to expand intra-ASEAN trade further.

In the long run, it is expected that a gradual increase in production specialization will occur among member countries according to comparative advantage as determined by resource endowments, productivity and other factors. Specialization should only be concerned with future additions to regional production and not with existing production levels. Such specialization should not effect a decrease in the absolute level of output or reduction of employment in any subsector of member country's agriculture. Integration should therefore not be a threat to existing patterns of production and levels of employment in agriculture.

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[6] The long term trend of food situation in ASEAN was examined in a study by Prabowo and Antiporta.

The level of government interventions in setting producer and consumer prices in ASEAN varies from country to country and changes with time. Differences in price intervention policies lead to variations of food prices for like food commodities in the region. Frequently, these quasi-political prices do not reflect long-term supply demand situations and trends. In regional integration of agriculture, prices are the most sensitive and difficult of issues. Given the variation in internal prices among member countries, the result of freeing trade would cause socio-economic problems for those members with support prices well above world prices--especially if they are unable to produce the same commodities at competitive prices. A first requirement then in the long term liberalization of agriculture approach is the harmonization of agricultural policies in the region.

If the ultimate long term goal of integrating agriculture is to free trade within the region, it would be easier if the agriculture policies of member countries do not vary so much. The greater the policy distortions the greater the problems in moving toward free trade. As long as one member country in the integration framework considers the change in intervention prices or the freeing of agriculture trade a threat to its social and economic stability, it is unlikely that there will be an ASEAN consensus to integrate national agricultures.

Commodities which are produced primarily for export to third countries should not be brought within the scope of ASEAN

Cooperation at least initially. Agriculture commodities produced in the region for export are competitive in world markets. However ASEAN members have and should continue to take a coordinated approach to stabilize export earnings of agricultural commodities, expand markets and initiate collective negotiations in international commodity problems.

A necessary condition for increased intraregional trade is the presence of a low cost and efficient transportation network.[7] Transportation networks in ASEAN are set up to serve either domestic markets or traditional extraregional trade with major trading partners. Likewise, market information is attuned to the developed market economies. This lack of a regional orientation is a primary obstacle to the expansion of regional trade. The overall cost of transportation within the region is high. An efficient transportation system is all the more vital as agriculture products are relatively low-valued bulky goods. Physical distance therefore is not equivalent to economic distance. The development cost of an improved regional transportation system is high and needs serious consideration on a regional level. With improved technology in packaging, storage and an efficient regional transport system, the extent for the market could be further extended.

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[7] For a discussion on the importance of transport in regional integration schemes, see Weber, 1977.

Conclusion

Agricultural policies in the region should be harmonized in the short and medium term. It is probably advisable for member counties to continue with their own national support programs. Protection at borders would permit members to maintain or attain desired levels with bilateral trade agreements whereby members could have the first right of refusal in food deficit commodities at preferential rates. At the same time, intra-regional trade in complementary food products should be identified and promoted. For the longer term, member countries should reach an understanding on the need to harmonize agriculture policies to reduce differences. Much will be achieved if member countries can slowly agree to reduce the differences prevalent in the region.

CHAPTER VIII
A PLANNING MODEL FOR ECONOMIC INTEGRATION

A multisector linear programming model for economic integration of the type suggested by Mennes (1973) will be used in this study to determine the effects of intraregional trade liberalization and the potential of intra-ASEAN trade. The model minimizes investment outlays given fixed income growth targets over a range of reduced tariff rates among the ASEAN countries.

Ideally, to determine the effects of economic integration, the scheme and methodology of the model should be able to compare a situation where there is no integration and one where some form of integration is envisaged. The model should provide the same information with respect to the individual countries participaing in an economic integration scheme and the same individual countries without integration plans. Therefore, the scheme and methodology of the planning model should be able to determine the consequences of economic integration for each of the partner countries. A comparison of the outcomes between the single-country models (where there is no integration) and the integration model should indicate how production and trade structures would be affected by tariff reductions.

A simple model with no explicit transport costs or tariffs will be illustrated before a more comprehensive extended model is presented.

Illustration of a Single-Country Model

The model minimizes investment outlays over a planning period of five years, given fixed income targets for all member countries. The model distinguishes between national and international sectors. National sectors are those sectors where products cannot be transported internationally or where production is mainly confined to the domestic economy. Restrictions on production and trade, transportation cost, tariffs and durability of investment goods are not taken into account in the simple model. These features, however, will be incorporated in the extended models.

If capital is the only scarce production resource and assumed to be infinitely durable, a simple form of the model for a single-country can be written as follows:

$$(1.1)\quad \sum_{h'=1}^{n} \alpha_{hh'} x^{h} + c^{h} + \bar{i}_{T}^{h} + e^{h} - m^{h} = x^{h} + \bar{i}_{o}^{h} \quad (h=1,\ldots,m)$$

$$(1.2)\quad \sum_{h'=1}^{n} \alpha_{hh'} x^{h} + c^{h} + \bar{i}_{T}^{h} = x^{h} + \bar{i}_{o}^{h} \quad (h=m+1,\ldots,n)$$

$$(1.3)\quad \bar{i}_{T}^{h} = \frac{1}{T} \sum_{h'=1}^{n} k_{hh'} x^{h'} \quad (h=1,\ldots,k)$$

$$(1.4)\quad \sum_{h'=1}^{n} \left(1 - \sum_{h'=1}^{n} \alpha_{hh'}\right) x^{h} = y$$

(1.5) $c^h = \delta^h y \quad (h=1,\ldots,j)$

(1.6) y = exogenous

(1.7) $\text{Min } Z = \sum_{h=1}^{n} \sum_{h'=1}^{n} k_{hh'} x^{h'}$

(1.8) and all variables ≥ 0

where:

x^h = increase in production during the plan period in sector h $(h=1,\ldots,n)$

c^h = increase in consumption during the plan period in sector h $(h=1,\ldots,n)$

e^h = increase in exports of commodity h during the plan period $(h=1,\ldots,m)$

m^h = increase in imports of commodity h during the plan period $(h=1,\ldots,m)$

$\bar{i}^h_T$, $\bar{i}^h_0$ = levels of investment in the form of commodity h with respect to the target year and base year of the plan period

T = length of the plan period

δ^h = marginal propensity to consume commodity h

$\alpha_{hh'}$ = input-output coefficients

$k_{hh'}$ = partial incremental capital-output ratio (PICOR)

Z = value of objective function.

Equations 1.1 and 1.2 are the balance equations for the international $(h=1,\ldots m)$ and national sectors $(h=m+1,\ldots,n)$, respectively. Equation 1.4 defines the income increase target which is exogenously determined in equation 1.6. Equations in 1.5 are the consumption functions and j is the number of consumption goods sectors. Equation 1.7 represents investment outlays and is the objective function to be minimized during the plan period. These outlays correspond to the production increases which are necessary in order to attain the income target. The model is based on the assumption that a relationship exists between the gross investment level and the increase in production. It also assumes that there is no time lag between investment and the increase in production (Mennes, 1973:19). The objective function is formulated given the assumption that the durability of capital goods is infinite. The consequences of abandoning this unrealistic assumption will be examined later. Finally, (1.8) consists of the usual non-negativity conditions for the variables in a linear programming problem.

The formulation of the investment function in Equation (3) $(h=1,\ldots,k)$ where k is the number of investment goods sectors requires an assumption regarding the time-path of the production increases over the plan period. For reasons of simplicity, each of the investment equations is based on the assumption that, during the plan period, production increases by the same amount annually. The assumption that production increases according to an arithmetic series implies that the level of investment increases in the first year of the plan period and thereafter remains constant until the target year. Alternative assumptions of production increases or investment growth according to either an arithmetic or geometric series may be made (Mennes, 1973:20).

From the model as formulated, it is possible that the solution is optimal when production in the national sectors and in one international sector increase. The commodities of the international sectors which do not appear in the optimal solution are imported to satisfy the increase in intermediate and final demand. This implies a heavy emphasis on specialization, which may be unrealistic for a variety of reasons. Economic development policy, high transportation cost, barriers to international trade and the inability to increase capacity within a short time and desire for a stable export earnings may warrant a policy of diversification over specialization. In view of the above, one may impose upper bounds on either the production or exports of the commodity in which the country is otherwise specializing. These aspects will be discussed later.

Features to be Incorporated in the Extended Model[1]

Before the simple model can be used to examine the effects of ASEAN economic cooperation, a number of additional features need to be considered for inclusion. These features include explicit transport cost, tariffs, finite lifetime of investment goods, production growth targets and constraints, employment considerations and labor as an additional scarce factor of production.

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[1] A detailed account of these features are found in Mennes (1973), chapter 3.

Transport Cost Formulation

The multicountry feature of the model implies a spatial element and the need for transportation cost to be introduced. Since capital is the only scarce factor considered in the model, transport costs will therefore consist of investment expenditures made for transporting products of the international sectors, but only if they are traded internationally. It is further assumed that the cost of transportation is proportional to the amounts transported. Domestic transport flows are not accounted for explicitly. They are, however, implicitly taken into account. Since the domestic transport is generally included in the services sector, investment costs for capacity increases in the domestic transport sector are reflected in the corresponding partial capital-output ratio. The introduction of explicit transport cost has implications for the formulation of both the objective function and investment equations of the model. These will be dealt with later.

Tariff Formulation

The effect of tariffs on production and trade will constitute the main focus of this study. The model is used to examine the consequences of a policy of progressively reducing the tariff rates. On the formulation of tariffs, only export trade flows are considered and not imports. Each country aims at the best allocation of its resources in production and transportation activities. Therefore, to achieve this efficiency, a country has to take into consideration the actions of other countries which involve costs for the country concerned. Tariffs imposed on the products of the exporting country will constitute an obstacle to the country selling abroad. Overcoming this obstacle involves costs, for the tariff imposed increases the price of the export in the foreign market. If it is assumed that the exporting country can sell the same quantity at a correspondingly lower export price (which is equal to the domestic price plus transportation cost), it may consider the tariff as an additional cost per unit of the commodity exported. This is likened to "a situation for instance where the exporting country has to create a nonconsumable fund during the plan period from which it compensated the importers in the importing countries for the tariffs paid to them" (Mennes, 1973:47-50). However, tariffs that the country itself imposes on imports should not be taken into account as the latter do not involve any costs for the country concerned.

In the model, tariffs are imposed by the importing countries in the form of a percentage levied on the exporting country's export price of a commodity. The export price therefore consists of the domestic price plus the cost of transporting the commodity abroad. In the model, therefore, the tariff of an international product will be computed by using its own direct cost coefficient of production and international transport cost. Consequently, the formula used for calculating the tariff of international product h at 't' percentage of production value is

$$t \left(\sum_{h'} k_{hh'} + \sum_{h'} k^{e}_{hh'} \right)$$

where	$k_{hh'}$	is the partial incremental capital-output ratio of production activity h
	$k^{e}_{h'h}$	is the partial incremental capital-output ratio of export of product h
and	t	is the tariff rate.

The introduction of tariffs has implications for the formulation of the objective function. This will be examined in due course.

Finite Lifetime of Investment Goods

The simplistic assumption of an infinite lifetime for capital goods is discarded in the extended model. There are three aspects. Firstly, during the planning period, a part of the productive capacity existing in the base year will be put out of operation because of technical wear and tear. Secondly, investments during the plan period consist of different types of capital goods, with different lifetimes, some possibly well beyond the plan period. Thirdly, in addition to technical reasons, economic considerations may also play an important role in putting existing capacities out of operation.

In contrast to the previous formulation and in order to take these new features into account, the formulation of the model must be rewritten in terms of absolute amounts in the final year of the plan period instead of increases in the variables over the plan period. The specifics of these features in the various equations will be examined when the extended model is discussed.

Production and Growth Targets and Constraints

Growth targets are represented as constraints in the model and are specific to a country. The pursuit of a balanced growth strategy and food self-sufficiency policies are much evident in medium term development plans of most developing countries. These features can be easily incorporated in the planning model (Mennes, 1973:74). A production growth target in the model could be represented by the summation of value added such that

$$\sum_h \alpha_{oh} x^h \geq \text{growth target, a constant}$$

The opportunity cost requirements of such a policy can be estimated from the shadow prices of the target constraints. The costs could also be compared with the outcomes of an unconstrained model. The limitations of capacity expansion, particularly the agricultural sectors due to climatic conditions, resources available and limitations of demand, may warrant the need to place upper bounds on some of the respective sectors in the model.

Employment Considerations

The employment aspects in the planning models, where costs are minimized given income-increase targets, can be taken into account in the following ways. Firstly, from the previous solutions formulated entirely in terms of an income increase, analyze the implied consequences with respect to increase in employment by multiplying the calculated production increase by the corresponding employment-output ratios. If the results are unsatisfactory in terms of employment creation, the procedure could be repeated with a different income target. Secondly, solve the models in terms of employment targets instead of income targets and examine the implied consequences on income increases. Thirdly, it may be more appropriate to introduce income and employment targets simultaneously. Formulate the employment targets as inequalities and income increase targets as either equalities or inequalities to avoid an inconsistency problem.

Labor As An Added Scarce Factor of Production

The assumption of capital as the only scarce factor of production in the minimization problem implies a tendency towards labor-intensive products or production techniques. Labor could be added as a second scarce factor.

The Extended Model for the r^{th} Country

The model given below is an extension of the simple single-country model and incorporates some of the extensions just discussed. A set of technical relations and production constraints for the international sectors are also included.

$$(2.1)\quad \sum_{h'=1}^{n} \alpha^{r}_{hh'} \left(\bar{x}^{rh'}_{o} - u^{rh} + x^{rh'} \right) + \bar{c}^{rh}_{T} + \bar{i}^{rh}_{T} + \bar{e}^{rh}_{T} - \bar{m}^{rh}_{T} =$$

$$\bar{x}^{rh}_{o} - u^{rh} + x^{rh'} \qquad (h=1,\ldots,n)$$

$$(2.2)\quad u^{rh} = \sigma^{rh} \bar{x}^{rh}_{o} \qquad (h=1,\ldots,n)$$

$$(2.3.1)\quad \sum_{h'}^{n} \alpha^{r}_{oh'} \left(\bar{x}^{rh'}_{o} - u^{rh} + x^{rh'} \right) = \bar{Y}^{r}_{T}$$

$$(2.3.2)\quad \bar{Y}^{r}_{T} \text{ is exogenously determined}$$

$$(2.4)\quad \bar{c}^{rh}_{T} = \delta^{rh} \bar{Y}^{r}_{T} \qquad (h=1,\ldots,j)$$

$$(2.5)\quad \bar{i}^{rh}_{T} = \frac{1}{T} \left[\sum_{h'}^{n} k^{r}_{hh'} x^{rh'} + \sum_{h'}^{m} k^{re}_{hh'} \left(\bar{e}^{rh'}_{T} - \bar{e}^{rh'}_{o} \right) \right.$$

$$\left. + \sum_{h'}^{m} k^{rm}_{hh'} \left(\bar{m}^{rh'}_{T} - \bar{m}^{rh'}_{o} \right) \right] \qquad (h=1,\ldots,k)$$

$$(2.6)\quad x^{rh} \leq \text{exogenous value}$$

$$(2.7)\quad \text{Min } Z = \sum_{h}^{k}\sum_{h'}^{n} k_{hh'}^{r} x^{rh'} + \sum_{h}^{k}\sum_{h'}^{m} k_{hh'}^{re} e_{T}^{\underline{r}h'}$$

$$+ \sum_{h'}^{m} t^{rh'} \left(\sum_{h}^{k} k_{hh'}^{r} + \sum_{h}^{k} k_{hh'}^{re}\right) e_{T}^{\underline{r}h'} \quad + \sum_{h}^{k}\sum_{h'}^{m} k_{hh'}^{rm} m_{T}^{\underline{r}h'}$$

$$- \quad \text{constant}$$

$$\text{where constant} = \sum_{h}^{k}\sum_{h'}^{m} k_{hh'}^{re} e_{o}^{\underline{r}h'} + \sum_{h'}^{m} t^{rh'} \left(\sum_{h'}^{k} k_{hh'}^{r} + \sum_{h}^{k} k_{hh'}^{re}\right) e_{o}^{\underline{r}h}$$

$$+ \sum_{h}^{k}\sum_{h'}^{m} k_{hh'}^{rm} m_{o}^{\underline{r}h'}$$

$$(2.8)\ \text{and}\ x_{o}^{\underline{r}h} ;\ u^{rh} ;\ x^{rh} ;\ c_{T}^{rh} ;\ i_{T}^{\underline{r}h} ;\ e_{T}^{\underline{r}h} ;\ e_{o}^{\underline{r}h} ;\ m_{T}^{\underline{r}h} ;\ m_{o}^{\underline{r}h} ;$$

$$Y_{T}^{\underline{r}} \ \text{and} \ Z \geq 0 \ , \ \text{for all } r \text{ and } h$$

Note:

	Sector No.	
Consumer goods producing sectors	1,2,4-9,12A-24	j = 22
Investment goods producing sectors	9,14,19-21,23,24	k = 7
National sectors	22-24	l = 3
International sectors	1-21	m = 22
	Total	n = 25

r = 1,...,5 (country)

Balance Equations (2.1)

In contrast to the simple model, the present model is formulated in terms of the absolute amounts in the final year of the plan period instead of increases in the variables over the plan period (Mennes, 1973:24). The set of balance equations, for each national [(h=1,..,m) for each country] and international [(h=m+1,...,n for each country] sector, equate total demand in the target year to total supply in the same year. Total demand and total supply are defined as production in the base year (x_0^h) minus capacity put out of operation because of wear and tear (u^h) plus the capacity created during the plan period ($x^{h'}$). The variables ($x^{h'}$) represent not only replacements of the reductions in capacity because of wear and tear (u^h), but also extensions above the original capacities (x_o^h). The intermediate demand is obtained by multiplying the vector with the input-output coefficients. The remaining variables are the same as before except that they now refer to the final year of the plan period. The consumption and investment variables are nonzero only for the sectors that produce consumer and capital goods respectively. The export and import variables refer only to the international sectors.

Technical Equations (2.2)

These equations determine for each of the sectors (h=1,...,n) which part of the capacity in the base year has to be put out of operation during the plan period because of wear and tear. The model therefore indicates not only in which sectors the original existing capacity should be replaced, but also in which other sectors capacity should be expanded.

The present formulation implies that capacity created during the plan period are not put out of operation during the same period. It was pointed out earlier that capital stock may depreciate due not only to technical considerations, but probably also to a larger extent, to economic factors. The simplest way is to formulate the balance equations as inequalities rather than equalities. The slack variables then appearing in the optimal solution can be interpreted as over capacities put out of operation by economic factors.

Income Target Equations (2.3)

The following two equations determine the income target in the final year of the plan period. Equation (2.3.1) states that the sum of the value-added in all sectors is equal to the total income which is exogenously determined in Equation (2.3.2).

Consumption Functions (2.4)

These equations for each sector producing consumer goods determine in the target year of the plan period consumption as a function of the level of income in the same year. The marginal propensities to consume are assumed to be identical to the average propensities to consume.

Investment Equations (2.5)

These equations relate for each capital-producing sectors, the investment outlay in the target year ($\bar{i}_T$) the production capacity created ($x^{h'}$) and the increase in international transport flows i.e., exports ($e_T^{h'} - e_0^{h'}$) and imports ($m_T^{h'} - m_0^{h'}$)

during the plan period. The equations also imply the assumption that during the plan period, not only production, but also international transport flows change according to an arithmetic progression. Transportation costs are assumed to be proportional to amounts transported.

Production Constraints (2.6)

These inequalities represent exogenously determined restrictions on the expansion of production in a number of international sectors as discussed earlier.

Objective Function (2.7)

The objective function minimizes investment outlays corresponding to production capacities created during the plan period necessary in order to attain the income target in the final year and increases in international transport flows. The total cost function therefore consists of three elements

a. investment outlays needed to increase production
b. cost coefficients for export trade flows, consisting of two parts. Firstly, investment costs for export-transport capacity increases and tariff costs as a consequence of existing tariffs on exports

c. investment costs for imports, needed for the increase in import-transport capacity.

The objective function could be formulated to take account of the investment goods which have different lifetimes. But due to data limitations, the objective function as illustrated in equation 2.7 is based on an assumption that the same lifetime of investment goods among the various member countries is the same.

Non-Negativity Conditions (2.8)

These restrictions are added to ensure non-negativity values for production, investment, income and trade.

The Extended Integration Model

An important distinction between this model and the single country model is that the trade variables now distinguish trade flows between integration partners (intra-ASEAN) and trade flow between each of them and countries outside the regional grouping (extra-ASEAN trade). This distinction is necessitated by the need to examine, in greater detail,the effects of trade liberalization arrangements within ASEAN. The various sets of equations will now be examined relative to the single-country model.

(3.1) $$\sum_{h'}^{n} \alpha_{hh'}^{r} \left(\bar{x}_{o}^{rh'} - u^{rh} + x^{rh'} \right) + \bar{c}_{T}^{rh} + \bar{i}_{T}^{rh} + \bar{e}_{T}^{rh} - \bar{m}_{T}^{rh} =$$

$$\bar{x}_{o}^{rh} - u^{rh} + x^{rh} + \sum_{r'} \bar{t}_{T}^{r'rh} - \sum_{r'} \bar{t}_{T}^{rr'h}$$

(r=1,...,5; h=1,...,25)

(3.2) $$u^{rh} = \sigma^{rh} \bar{x}_{o}^{rh}$$ (r=1,...,5; h=1,...,25)

(3.3.1) $$\sum_{h'}^{n} \alpha_{oh'}^{r} \left(\bar{x}_{o}^{rh'} - u^{rh} + x^{rh'} \right) = \bar{Y}_{T}^{r}$$ (r=1,...,5)

(3.3.2) $\bar{Y}_{T}^{r}$ is exogenously determined

(3.4) $$\bar{c}_{T}^{rh} = \delta^{rh} \bar{Y}_{T}^{r}$$ (r=1,...,5; h=1,...,22)

(3.5) $$\bar{i}_{T}^{rh} = \frac{1}{T} \left[\sum_{h'}^{n} k_{hh'}^{r} x^{rh'} + \sum_{h'}^{m} k_{hh'}^{re} \left(\bar{e}_{T}^{rh'} - \bar{e}_{o}^{rh'} \right) + \sum_{h'}^{m} k_{hh'}^{rm} \left(\bar{m}_{T}^{rh'} - \bar{m}_{o}^{rh'} \right) \right] + \sum_{r'}^{p} \sum_{h'}^{m} k_{hh'}^{rr't} \left(\bar{t}_{T}^{rr'h} - \bar{t}_{0}^{rr'h} \right)$$

$$+ \sum_{r'}^{p} \sum_{h'}^{m} k_{hh'}^{r'rt} \left(\bar{t}_{T}^{r'rh} - \bar{t}_{0}^{r'rh} \right)$$

(3.6) $x^{rh} \leq$ exogenous value

(3.7) $$\text{Min } Z = \sum_{r}^{p} \sum_{h}^{k} \sum_{h'}^{n} k_{hh'}^{r} x^{rh'} + \sum_{r}^{p} \sum_{h}^{k} \sum_{h'}^{m} k_{hh'}^{re} \bar{e}_{T}^{rh'}$$

$$+\sum_{r}^{p}\sum_{h'}^{m} t^{rh'}\left(\sum_{h}^{k} k_{hh'}^{r} + \sum_{h}^{k} k_{hh'}^{re}\right) e_{T}^{r\_h'}$$

$$+\sum_{r}^{p}\sum_{h}^{k}\sum_{h'}^{m} k_{hh'}^{rm}\, m_{T}^{r\_h'} + \sum_{r}^{p}\sum_{h}^{k}\sum_{h'}^{m} k_{hh'}^{rt}\, t_{T}^{rr'\_h'}$$

$$+\sum_{r}^{p}\sum_{h'}^{m} t^{rh'}\left(\sum_{h}^{k} k_{hh'}^{r} + \sum_{h}^{k} k_{hh'}^{rt}\right) t_{T}^{rr'\_h'}$$

$$+\sum_{r}^{p}\sum_{h}^{k}\sum_{h'}^{m} k_{hh'}^{rt}\, t_{T}^{r'r\_h'} \quad - \text{ constant}$$

$$\text{where constant} = \sum_{r}^{p}\sum_{h}^{k}\sum_{h'}^{m} k_{hh'}^{re}\, e_{o}^{r\_h'} + \sum_{r}^{p}\sum_{h'}^{m} t^{rh'}\left(\sum_{h'}^{k} k_{hh'}^{r} + \sum_{h}^{k} k_{hh'}^{re}\right) e_{o}^{r\_h}$$

$$+\sum_{r}^{p}\sum_{h}^{k}\sum_{h'}^{m} k_{hh'}^{rm}\, m_{o}^{r\_h'} + \sum_{r}^{p}\sum_{h}^{k}\sum_{h'}^{m} k_{hh'}^{rt}\, t_{o}^{r'r\_h'} + \sum_{r}^{p}\sum_{h}^{k}\sum_{h'}^{m} k_{hh'}^{rt}\, t_{o}^{rr'\_h'}$$

$$+\sum_{r}^{p}\sum_{h'}^{m} t^{rh'}\left(\sum_{h}^{k} k_{hh'}^{r} + \sum_{h}^{k} k_{hh'}^{rt}\right) t_{0}^{rr'\_h'}$$

(3.8) as in (2.8) plus $t_{T}^{rr'\_h}\ ;\ t_{T}^{r'r\_h}\ ;\ t_{0}^{rr'\_h}\ ;\ t_{0}^{r'r\_h} \ge 0$

Note:

	Sector No.	
Consumer goods producing sectors	1,2,4-9,12A-24	j = 22
Investment goods producing sectors	9,14,19-21,23,24	k = 7
National sectors	22-24	l = 3
International sectors	1-21	m = 22
	Total	n = 25

r = for country 1,...,5

member countries on third countries. A customs union format can be examined when tariffs on mutual trade flows are abolished and a common external tariff imposed on third countries. Individual income targets and consumption levels corresponding to single-country models are maintained. However, when a single common income target for the integration area as a whole is substituted, implying free factor movements (i.e., capital in this instance even though consumption targets are maintained) this situation reflects a common market type of economic cooperation.[2]

In this study, the individual income target of each of the countries is maintained. It is therefore assumed that the participating countries will cooperate only with respect to trade policies. Free factor movement is not considered as it would be in a common market. However, the tariffs on mutual trade flows are progressively reduced between the integration partners until they are is totally abolished while maintaining each's own tariff against non-members as would be the case in a free trade area. These effects will be analyzed.

Consumption Functions (3.4)

These equations, relating each consumer goods producing sector in each country, are identical to the corresponding relations in the single-country model.

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[2] The customs union and common market effects are not examined in this study.

Investment Equations (3.5)

The only difference of these from the corresponding equations in the single-country model is that investment outlays in the target year of the plan period have to be related to the new variable, i.e., mutual trade flows. It is assumed that for a mutual trade flow, investment expenditures for transportation are made both in the exporting as well as importing country. However, the exporting country invests in construction and transport equipment, but the importing country in construction only (Mennes, 1973:56).

Production Constraints (3.6)

These are identical to the single-country model and will not be further elaborated.

Objective Function (3.7)

The objective function is similar to that in the single-country model except for the additional cost coefficients of the mutual trade variables. In this study, tariffs on all mutual trade flows are reduced progressively until they are is entirely abolished as in a free trade area. This implies that in the free trade area format, the cost coefficients will consist only of an investment-cost portion. When tariffs are reduced progressively, the tariff cost coefficients will be reduced accordingly. As before, the objective function assumes a similar lifetime of capital goods as in the earlier single-country models.

Non-Negativity Conditions (3.8)

The same restrictions apply.

Numerical Specification of the ASEAN Planning Models

In this section, the numerical specifications of the five single-country models as well as the ASEAN integration model will be presented. The single-country models depict a situation where no integration is envisaged compared to the ASEAN integration model where internal tariffs are progressively reduced. A comparison of the outcomes would indicate the consequences of tariff reduction within ASEAN.

All the planning models correspond to a medium term planning period of 5 years. Each model distinguishes 25 sectors in the economy (Table 8.1). Utilities (22)[1], construction (23) and services (24) are considered to be national sectors while the rest are international sectors. It is also assumed that livestock, fisheries and forestry (9), lumber, wood products, pulp, paper and printing and other manufacturing (14), metal products (19), machinery (20), transport equipment (21), construction (23) and services (24) sectors produce commodities which can also be used for investment purposes. Hence they are also referred to as investment-goods producing sectors. Except for natural rubber (3), crude petroleum and natural gas (10), and other mining (11), all other sectors produce consumer goods.

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[1] Number in parenthesis denotes sector.

Table 8.1 CLASSIFICATION OF SECTORS IN PLANNING MODELS

Sector	Sector Name	C	I	N	Int.
1	Paddy	x			x
2	Cassava	x			x
3	Natural Rubber				x
4	Sugar Cane	x			x
5	Oil Palm/Coconut	x			x
6	Fiber Crops	x			x
7	Other Food Crops	x			x
8	Other Commercial Crops	x			x
9	Livestock, Fishery & Forestry	x	x		x
10	Crude Petroleum/Natural Gas				x
11	Other Mining				x
12A	Rice Milling	x			x
12B	Food, Beverage & Tobacco Manu.	x			x
13	Textiles, leather & products thereof	x			x
14	Lumber, Wood products, pulp, paper & printing, and other manufacturing	x	x		x
15	Chemical products	x			x
16	Petroleum and its products	x			x
17	Rubber products	x			x
18	Non-metallic mineral products	x			x
19	Metal products	x	x		x
20	Machinery	x	x		x
21	Transport equipment	x	x		x
22	Utilities	x		x	
23	Construction	x	x	x	
24	Services	x	x	x	

Note:

C denotes consumption sectors
I denotes investment sectors
N denotes national sectors
Int denotes international sectors

For variables in the extended single-country models, the following statistical data are required.

1.	${}^{r}x^{h}_{o}$	capacity and production in sector h in the base year of the plan period in country r;h=1,...,25; r=1,...,5.
2.	${}^{r}u^{h}$	capacity in sector h put out of operation during the plan period because of wear and tear in country r; h=1,...,25; r=1,...,5. Capacity equal to ${}^{r}\sigma^{h}x^{h}_{o}$ where ${}^{r}\sigma^{h}$ is the proportion of capacity present in the base year of the plan period put out of operation during the plan period because of the wear and tear in country r; h=1,...,25; r=1,...,5.
3.	${}^{r}x^{h}$	capacity and corresponding production in sector h created during the plan period in country r; h=1,..,25; r=1,...,5. Value is exogenously determined.
4.	${}^{r}c^{h}_{T}$	consumption of product h in country r in the target year of the plan period; h=1,...,22 sectors; r=1,...,5. Value equal to ${}^{r}\delta^{h}\ {}^{r}Y_{t}$ where ${}^{r}\delta^{h}$ is the marginal propensity to consume product h in country r; r=1,...,5.
5.	${}^{r}e^{h}_{o}$	Exports of product h from country r in the base year of the plan period; h=1,...,22 sectors; r=1,...,5. (For single-country models, include export to integration partners. For integration model, excludes import from integration partners).
6.	${}^{r}m^{h}_{o}$	Imports of product h in country r in the base year of the plan period; h=1,..., 22 sectors; r=1,...,5. (For single-country models, include import from integration partners. For integration model excludes import from integration partners).
7.	${}^{r}\alpha_{hh'}$	input-output coefficient for country r, h,h'= 1,...,25; r=1,...,5.
8.	${}^{r}\alpha_{Oh'}$	value-added coefficient = (1 - ${}^{r}\alpha_{hh'}$); r=1,...,5; h'=1,...,25.

9.	$^{r}\bar{Y}_{T}$	income target for the target year of the plan period in country r;r=1,...,5. This is an exogenous value.
10.	$^{r}k_{hh'}$	partial incremental capital-output ratio in country r;r=1,...,5; h'=1,...,7; h=1,...,25; k=sectors 9,14,19,20,21,23 and 24.
11.	$^{r\,e}k_{hh'}$	partial incremental capital-output ratio of export flow from country r; r=1,...,5; h=1,2 for sectors 21 and 23; h'=1,...,25.
12	$^{r\,m}k_{hh'}$	partial incremental capital-output ratio of import flow in country r;r=1,...,5; h=1,2 for sectors 21 and 23; h'=1,...,25.
13.	$^{r\,h'}t$	tariff on export of product h in country r; h = 1,...,22 sectors, r=1,...,5.
14.	T	length of planning period in years. Assumed to be 5 years in model.

For the extended integration model, in addition to those inputs in the extended single-country model, statistical data for the following variables are needed.

1.	$^{rr'h}t_{T}$; $^{rr'h}t_{0}$	amount of product h transported from country r to country r' in the target and base year of the plan period respectively; h=1,...,22 sectors, r'=1,...,5. (r≠r')
2.	$^{r'r}k_{hh'}$; $^{rr'}k_{hh}$	partial incremental capital-output ratio of mutual trade flow coming from country r and with destination r' when symbolized rr'and country r' to r when symbolized r'r with respect to product h; h=1,..,7 sectors; r,r'=1,...,5.(r≠r')

Sectors	No. of Sectors	Sector No.
consumer goods-producing sectors	$j=22$	1,2,4-9,12A-24
Investment goods-producing sectors	$k=7$	9,14,19-21,23,24
National sectors	$l=3$	22-24
International sectors	$m=22$	1-21
Total No.of Sectors	$n=25$	

The Extended Country Model

The extended single-country models for each member countries are identical except for the numerical values.These will be examined in relation to the model presented earlier in terms of the various equations.

Balance Equations (2.1). These equations, both for the national as well as international sectors, require the transactions matrix or $[I - \alpha]$ for the production capacity in the base year (x_o^h), production capacity created during the plan period (x^h) and capacity put out of operation during the plan period because of wear and tear (u^h). The input-output coefficient matrix $[\ \alpha\ ]$ at producers' price (25 sectors) for the five ASEAN countries: namely, Indonesia, Malaysia, Philippines, Singapore and Thailand, are given in Tables A.1 to A.5. The basic input-output coefficients are obtained from The International Input-Output Table for ASEAN Countries 1975 (Institute of Developing Economies, 1982). Since a 25-sector economy is used for the analysis with emphasis on the agriculture sectors, the coefficients presented are either aggregations or disaggregations from the published data. Although the base year is 1980 and coefficients can and do vary over time because of technological and price changes, it is assumed here that the coefficients remain unchanged. Prior to the availability of International Input Output Table for ASEAN Countries 1975, individual input-output tables for the member countries were available. However, the level of aggregation and sectoral classification were dissimilar, thereby making sectoral comparisons difficult because they were not conformable. Fortunately, the problem does not arise here. The balance equations (2.1) for computational purposes can be transformed such that the sub-matrix $[I - \alpha] x_o^h$ is on the right-hand side of the equation. The value indicates the net of total output and intermediate demand for the respective sectors. These are presented in Table A.6.

Technical Relations (2.2). The right-hand side of the Technical Relations (Equation 2.2) are presented in Table A.7. The values indicate the capacity put out of operation during the plan period because of wear and tear. The value of σ^n is assumed to be 0.8811 for the agricultural sectors (h=1,...,9), and 0.7433 for the non-agricultural sectors (h=10,...,24).[2]

Income Target Equations (2.3). Equation (2.3.1) equates the sum of the value-added of all sectors in the economy with the total income in the target year of the plan period. The value is exogenously determined, assuming a constant annual growth rate of 5% from the base year. The total value-added coefficient α_{Oh} is shown in Table A.8. The value of the gross domestic product in the base period 1980 (- $\Sigma\alpha_{Oh}x^h_o$) and income target for the final year (1984) in the plan period (^rY_T) are shown in Table A.9.

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[2] The lower value for the agricultural sectors is due to the greater weight attributed to land relative to the non-agricultural sectors. In National Accounts, a depreciation rate of 6.5% is used. A depreciation of 5.75% is assumed here for the non-agricultural sectors.

Consumption Equations (2.4). Consumption is a function of the income level in the target year. The marginal propensities to consume which are used to determine the value of consumption are shown in Table A.10 for all ASEAN countries.

Investment Equations (2.5). In the present models, the investment equations relate the investment outlays in the target year of the plan period to the changes in production and the increases in international trade flows during the plan period (Equation 2.5). To relate the amount of investment necessary to produce a unit of output per time period, the partial incremental capital-output ratios (PICORs) are used.

A review of some of the literature on ICOR would be useful in understanding the conceptual problems encountered. ICOR is generally considered as a ratio between net investment, i.e., net of depreciation in capital stock, and corresponding increment in output made possible by the investment. For empirical purposes however, the ratio is almost invariably expressed in gross rather than net terms. This is due mainly to data availability, conceptual and definational problems in the measurement of net physical investment. Gross ICOR is usually measured by the ratios gross domestic fixed capital formation (GDFCF) to the change in gross domestic product over a time period. Despite the conceptual ambiguities and measurement problems, ICORs and also the average capital-output ratios have been frequently used by policy planners to predict capital requirements in development planning projects. In addition to the above problems, many planners doubt their usefulness because of the capital-output ratios' instability (incremental or otherwise) over time.

An empirical study of a sample of developed and developing countries revealed that national sectoral and subsectoral capital-output ratios varied over a wide range from year to year (Gianaris, 1968). However, over a period of 5 years, the extreme variabilities of the annual capital-output ratios were reduced substantially. This was not only for the entire economies but for sectoral values as well.

It is apparent from past empirical studies that an inverse relationship exists between the growth rates of gross domestic product and the ICORs, for the aggregate (total economy) as well as sectoral ICORs (Gianaris, 1978). The main reason for this instability is that investment is a more stable variable than the rate of growth of GDP. Usually, projected or planned investment is based on output or change in output of the most immediately past period or weighted over several preceding periods.

In another study on the relationship between the rate of growth and gross ICOR and other factors affecting the inverse of gross ICOR, Vanek and Studenmund (1968) found that the variation in the gross ICOR imputable to the rate of growth is most significant. Other explanatory factors considered were per capita GDP, agriculture's share of GDP, industry's share of GDP, imports as a share of GDP, energy per capita and population growth rate.

There were other studies which examined the international variations in the ICOR over space and time. Kuznets (1961) concluded that the gross ICOR tended to be higher in countries with higher per capita income. He also observed that of several advanced countries, the ICOR (both gross and net) tended to increase over time. These findings suggest that ICOR is an increasing function of income level across space as well as time. Sato (1971) assessed quantitatively the growth and income factors as explanatory variables for the variations and in the gross ICOR as the basis of a cross-country sample of 73 countries for 1950s and early 1960s. The evidence, when compared to previous studies, was less clear when he divided the sample into low, medium and high-income groups. However, he noted that changes in industrial structure were more important than changes in income level in explaining the variations in the Gross ICOR. His conclusions were that

a. in general, capital output ratio and income level are positive. This association is due to shifts of production to more capital-intensive sectors and to overall capital deepening.

b. The relative contraction of agricultural production exerts a positive influence on the aggregate capital output ratio (until income attains a fairly high level) due to the capital requirement differential between agriculture and nonagriculture.

c. The influence of the growth rate on the gross ICOR is notable in medium income economies but not significant in low-income economies.

In comparing the ICORs between developed and developing economies, Gianaris (1978) computed ICORs for the entire economies in 5-year periods. The 5-year intervals were used for purposes of narrowing the extreme variability of the annual ratios and because this is the period generally used in projection of economic development as it is in our planning model. Generally, developing countries had lower ICORs than developed countries, in both constant and current prices because of the more labor intensive production methods.

Having examined some of the conceptual problems of the ICOR, the variability and factors which account for the instability, it would be appropriate to examine the sectoral ICORs as these will be used in our planning model. Due to its variability, amongst other things, some economists have doubted the usefulness of national aggregate ratios in capital projections and have stressed the need for sectoral ratios (Gianaris, 1978). As in the aggregate values, all sectors of the countries considered exhibited wide annual variations. Sectors such as agriculture and mining, which are subject to weather and the external factors, are expected to fluctuate more than other sectors such as manufacturing, trade or banking. The following is summarized from Gianaris (1978:246).

> . . . in terms of variability, agriculture and mining presented the largest variation. Manufacturing and trade, banking services the lowest. All countries had high ICORs in the capital-intensive sectors of housing, electricity and transportation. Manufacturing, trade and other services had relatively lower ICORs. There was not a great difference in the industrial ICORs between developed and developing countries. Almost all countries considered had about the same manufacturing ICORs (between 2 and 3).
>
> In the majority of the sectors, developing countries have lower ICORs than developing countries, particularly in agriculture and public administration.

It is difficult to predict whether the sectoral ICORs in developing countries will tend to increase or decrease over time. Bhatt (1964) said that if a country is in an early stage of economic development, much social overhead capital or infrastructure is required in transport, power, waterworks, education and other public sector projects. All these will result in high sectoral ICORs. After this, additional public capital investment may not be required in similar amounts. Further increases in production efficiency, improved marketing and business organization can substantially decrease this ICOR. Over the long run, the ratio will probably decrease since most developed economies show a declining sectoral trend after the early stages of development (Goldsmith and Saunders, 1959:116, 224, and 306; Kuznets, 1961:205).

In terms of data availability, ICORs are the most difficult to obtain. Although the overall national capital-output or aggregate ratios can be computed from available aggregate data for the entire economies, or for a limited number of major sectors, the estimations of the sectoral ICORs according to the model classification have been most problematic. This is further compounded by the values of gross domestic fixed capital formation data expressed in constant values for some ASEAN countries, while others are in current values. Since ICORs in current prices are ordinarily lower than in constant prices, some adjustments were necessary.

The sectoral ICORs (required in the investment equations and objective function) for ASEAN member countries are presented in Table A.11. Except for the agriculture sectors (1 - 9) in the model classification, the sectoral ICOR values are computed from available secondary data. Likewise, due to the absence of data from Thailand, the sectoral ICORs for Philippines are assumed to be identical due to the similarities of their economies. Overall, the magnitude of the sectoral ICORs reflect previous empirical studies in that high ICORs prevail generally in utilities, construction and mining sectors, low ICORs prevail in agriculture, food, beverage, tobacco, rice milling and rubber products with the remaining sectors in the medium range.

The partial sectoral ICORs weighted according to the investment sector for the five partner countries are presented in Table A.12.

Other than relating to the investment outlay in the target year for each capital producing sector to the production capacity created, the investment equations also relate the expansion of the transport system due to the changes in international transport flows during the plan period. The investment costs corresponding to the international trade flows will be reflected in the PICORs with respect to the two capital-producing sectors, namely transportation equipment (sector 21) and construction (sector 23).

Due to the unavailability of data, the value imputed in Mennes (1973:55) will be used. The value of 0.2 (for ${}^{r}k^{e}_{hh}$ and ${}^{r}k^{m}_{hh}$) will be assumed for both the transportation equipment and construction sectors. Therefore, it is assumed that investment costs are not only the same in all the 5 member countries, but also identical in the commodity transported and the type of investment required.

The values for the right-hand side of the investment equations ($h = 21, 23$) are given in the table below. The right-hand side for capital producing sectors other than 21 and 23 (Table 8.2) are zero.

Table 8.2 RIGHT-HAND SIDE OF INVESTMENT EQUATIONS ($h = 21, 23$)

	Ind	Mal	Phi	Sin	Tha
$1/T\ \Sigma k^{e} e^{h'}_{o}$	159.5	105.7	56.8	171.6	49.7
$1/T\ \Sigma k^{m} e^{h'}_{o}$	88.9	93.7	44.0	182.0	72.7
Total	248.4	199.4	100.8	353.6	122.4

Production Constraints (2.6). As discussed earlier, limits to production capacity expansion are imposed for the international sectors for various reasons such as resource availability and demand constraints. Where data for the base year (1980) were not available, the base year outputs were estimated based on the average growth rates of preceding years. The gross domestic output (total output) for the target year (1984) were projected based on average growth rates at 1980 prices.

The total output for 1975, 1980 (base year) and 1984 (target year) are presented in Table A.13. The 1975 values are obtained from The International Input-Output Table for ASEAN Countries 1975 (Institute of Developing Economies, 1982). Except for Thailand, the output for 1980 for the other member countries were estimated based on preceding years' growth rates. All 1984 values were projected at 1980 prices. The maximum increase in production capacity which is the difference between the production capacity in the target year (1984) and the base year (1980) for all ASEAN countries is shown in Table A.14 .

Objective Function (2.7). The objective function minimizes investment outlays which corresponds to capacity expansion during the plan period in production activities and international transport flows. The three components, i.e., investment outlays for production capacity increase, cost coefficients--for exports and imports--and transport capacity expansion are presented in Table A.15.

The constant term in Equation (2.7.2) for the member countries are presented below in Table 8.3.

Table 8.3 VALUE OF CONSTANT TERM IN OBJECTIVE FUNCTION

Countries	Value
Indonesia	15,691.6
Malaysia	11,988.7
Philippines	5,982.0
Singapore	21,575.0
Thailand	7,081.2

The existing tariff levels in the export market faced by the ASEAN countries used to compute the tariff costs are presented in Table A.16. These are the postKennedy Round base rate tariffs in the 18 major industrialized countries weighted by world imports.

The Extended Integration Model

Although a new variable ($^{rr'}t_T^h$) is defined to denote intra-regional trade and the variables now redefined to signify only extra-regional trade ^re_T and ^rm_T, no additional data requirements are necessary. Similarly, the technical relations, consumption function equations, income-target equations and production constraints remain identical to the extended single-country models.

Investment Equations (3.5). Due to lack of information, it is assumed that numerical values of the partial incremental capital-output ratios corresponding to the mutual trade flows are equal to those corresponding to extraregional trade flows assigned earlier in the single models. The values of the right-hand side of the investment equations (only for sectors 21 and 23) are identical to the single country models.

The objective function is similar to that in the single-country models except for the cost coefficients corresponding to the mutual trade variables. It was earlier assumed that for a mutual trade flow, investment expenditures for transportation are made both by the exporting as well as importing country. The exporting country will invest in construction and transport equipment while the importing country in construction only. The PICORs for the two capital-producing sectors were earlier assumed to be 0.2. Therefore, the cost coefficient relating to the mutual trade flows will take the value of 0.6 when internal tariffs are totally abolished. The cost coefficients for the current tariff levels and that in the free trade area (FTA) situation in the objective function are presented in Table 8.4.

For ease of computation, the FTA situation was solved first. The cost coefficients for the intra-ASEAN trade flows only consist of an investment cost portion. Further solutions were then obtained as intraregional tariffs were imposed progressively by 10% margins. As intra-ASEAN tariffs were increased, the tariff cost coefficients were increased accordingly. The average tariff cost component would likely increase in proportion to the total investment cost. The average ASEAN tariff levels faced by each of the member countries are

Table 8.4 COST COEFFICIENTS OF INTRA-ASEAN TRADE VARIABLES IN THE OBJECTIVE FUNCTION AT 100% and 0% RATES OF TARIFF REDUCTION

Sector	Indonesia		Malaysia		Philippines		Singapore		Thailand	
	100%	0%	100%	0%	100%	0%	100%	0%	100%	0%
1	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60
2	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60
3	.60	.80	.60	.60	.60	.60	.60	.60	.60	1.01
4	.60	1.89	.60	.60	.60	.60	.60	.60	.60	1.01
5	.60	.91	.60	.60	.60	.75	.60	.60	.60	.85
6	.60	.62	.60	.60	.60	.75	.60	.60	.60	.85
7	.60	.60	.60	.60	.60	.69	.60	.60	.60	1.58
8	.60	.86	.60	.63	.60	.71	.60	.60	.60	.96
9	.60	1.01	.60	.66	.60	1.15	.60	.60	.60	.88
10	.60	.60	.60	.68	.60	.60	.60	.60	.60	.60
11	.60	1.85	.60	.61	.60	1.56	.60	.60	.60	.84
12A	.60	.60	.60	.65	.60	.60	.60	.60	.60	.60
12B	.60	1.36	.60	.94	.60	1.81	.60	.99	.60	1.42
13	.60	7.01	.60	1.17	.60	1.24	.60	.65	.60	1.05
14	.60	1.65	.60	.73	.60	1.67	.60	.60	.60	1.57
15	.60	.60	.60	.88	.60	2.18	.60	.61	.60	1.65
16	.60	.77	.60	1.92	.60	1.31	.60	.81	.60	1.38
17	.60	2.20	.60	.79	.60	1.78	.60	.60	.60	1.79
18	.60	6.34	.60	.96	.60	1.40	.60	.60	.60	1.20
19	.60	1.20	.60	.77	.60	1.67	.60	.60	.60	1.02
20	.60	1.05	.60	.90	.60	1.93	.60	.60	.60	1.25
21	.60	1.07	.60	1.20	.60	2.00	.60	.64	.60	1.17

presented in Table A.16. Table A.17 illustrates the increment in the cost coefficient corresponding to the mutual trade variables.

CHAPTER IX
RESULTS

The extended single-country and integration models are multi-sector linear programming models. These were solved using the Mathematical Programming System/360 (MPSX). Solutions were obtained for the five single-country models and the ASEAN integration model. In the integration model, across-the-board tariffs on all intraregional trade were reduced progressively until all regional trade barriers were abolished and a free trade area (FTA) situation.

In the first section, the results of the single-country models pertaining to production and trade variables in the final year of the plan period are examined. These are compared relative to initial sectoral productive capacities and trade in the base year of the plan period. No tariff reduction or integration is assumed in these single-country models.

In the second section, results of the integration model are analyzed. The integration model can examine the consequences of tariff liberalization ranging from zero to a total elimination of internal tariffs. It can therefore examine the effects ranging from a preintegration to a free trade situation. Since both models can examine a nonintegration situation, the results of both solutions are compared in terms of production and trade variables, demand for investment and total investment costs. Results for a free trade area situation as well as at various levels of tariff rate reductions are presented, with emphasis on extra and intraregional trade. Comparisons are made over the range of tariff cuts to determine the benefits of trade liberalization in terms of reductions of total investment costs to achieve fixed income targets.

In the third section, comparative advantage implications are drawn from a comparison of the dual values of production and trade variables and cost coefficients pertaining to tariff and investment.

Single-Country Models

The results of the five single-country models are presented in Tables B.1 to B.5.

Indonesia

The results for Indonesia show that production capacities increase in all the national sectors, namely utilities (22), construction (23) and services (24). No limits on production capacity expansion are placed on these national sectors and the original capacities are shown in column 3.

For the international sectors (textiles, leather and products (13), chemical products (15), petroleum and its products (16), nonmetallic (18) and metal products (19)), expansion are not necessary during the plan period. The capacities in the base year are sufficient to satisfy total demands in the target year of the plan period. Except for rubber products (17), increases in capacity of all other international sectors are to the limits imposed.

On trade, Indonesia exports products from 6 and imports from 15 of the 22 international sectors in the final year. Indonesia exports $13,194 million of crude petroleum and natural gas (10) in the final year of the plan period--slightly less than the amount exported in the base year. The country also exports $3865 million of food, beverage and tobacco products (12B). The exports of padi (1) must be viewed together with rice milling (12A). Indonesia, from the results shown, is therefore a net importer of rice. Major import sectors are metal products (19), machinery (20) and transport equipment (21). Of these major import sectors, capacities in machinery and transport equipment are insufficient to meet domestic demand. The overall trade balance amounted to a deficit of $13,682 million.

The dual values for the sectoral production capacity limits imposed, both for basic and nonbasic variables, are presented in the last column of the table. These will be discussed in the last section.

Malaysia

Table B.2 for Malaysia shows that production capacities increase in 2 of the 3 national sectors--construction (23) and services (24). The available capacity for utilities (22) in the base year of the plan period is sufficient to meet domestic demand in the final year of the plan period. Of the international sectors, only the agricultural sectors (1 through 9) increase their production capacities to the limits imposed. The nonagricultural sectors (10 through 22) do not require any expansion in their production capacities beyond those available in the base year of the plan period.

Although the results show no expansion in production capacity during the plan period for the nonagricultural sectors, the large initial capacities for rubber (17) and metal products (19) are more than sufficient to meet domestic demand. Hence, there are surpluses for export. However, the amount exported is much less than the net exports in both sectors in the base year of the plan period. When the sectors of padi and rice milling are examined together (1 and 12A), Malaysia is a net importer of rice. In addition to exporting rubber products (17), Malaysia also exports natural rubber (3), sugar cane (4), oil palm and coconuts (5), livestock, fishery and forestry products (9) and metal products (19). Major imports include food, beverage and tobacco manufactures (12B), and transport equipment (21). In terms of trade balance, Malaysia incurs a deficit of $7379 million.

Philippines

A striking feature of the Philippines results shown in Table B.3 is its lack of specialization.[1] Production capacity expansion occurs to the limit in all the sectors except for the petroleum and its products (16) and transport equipment (21).

Major export sectors are other mining (11), and textiles, leather and products thereof (13). Philippines also exports small amounts of natural rubber (3), sugar cane (4), oil palm (5) fiber crops (6) and other commercial crops (8). Major imports include crude petroleum and natural gas (10), metal products (19), machinery (20) and transport equipment (21). Philippines is a net importer of rice as rice milling (12A) is in excess of padi exports (1). The major export sector in the base year of the plan period, i.e., food, beverage and tobacco manufactures (12B), however, has become an import sector in the final year of the plan period as the large production capacity is unable to meet domestic demand. Overall, total imports exceed exports by $10,453 million.

Singapore

Sectors 1,2,4 and 10 are not considered for Singapore as these sectors are either nonexistent or too insignificant in the economy during the base year (Table B.4). All national sectors

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[1] This could be due to either the sectoral production constraints are too restrictive or that the income-increase target is too wide for the plan period.

(22 to 24) require expansion over initial production capacity to meet domestic demands. Among international sectors, livestock, fishery and forestry products (9) is the only substantial agricultural sector. However, production in the final year is insufficient to meet domestic needs. Production capacity expansions occur in textiles, leather and products thereof (13), lumber, wood products, pulp, paper and printing and other manufacturing (14), metal products (19), machinery (20) and transport equipment (21). Of these, sectors 13, 20 and 16 have an export surplus.

Being a nonproducer, Singapore imports all crude petroleum and natural gas (10) and exports petroleum and its products (16) over and above domestic needs. This is a vital industry to Singapore due to its importance in international shipping. Singapore is dependent on imports in all the other international sectors except 13, 20 and 16. The balance in trade in the final year of the plan period is a deficit of $1301 million.

Thailand

Results for Thailand (Table B.5) show a lack of specialization as in the Philippines. All national sectors expanded their production capacities to meet domestic demand. Except for chemical products (15) and petroleum and its products (16), and transport (21), all other sectors have expanded production capacities. Earlier arguments may account for this lack of specialization.

In trade flows, Thailand exports lumber, wooden products, pulp, paper, printing and other manufactures (13), nonmetallic mineral products (18) and all agricultural sectors except for oil palm and coconut (5). Thailand imports all her crude petroleum and natural gas (10) requirements. Other major import sectors include chemical products (15), metal products (19), machinery (20), and transport equipment (21). Total imports exceed total exports by $21,508 million.

The values of consumption in the target year of the plan period are presented in Table 9.1. Since the values are a function of the exogenous income, a comparison of these values will not be made.

ASEAN Integration Model

Various solutions are obtained as intra-ASEAN tariffs are progressively imposed at 10 percent margins from a free trade area, where tariffs are completely abolished, to an initial situation where tariffs are at preintegration levels. However, before the solutions are examined, some not so apparent differences--between the single-country models and the integration model with tariffs at preintegration levels--have to be clarified.

The *Single-country models* examine the total investment costs of each member country necessary to achieve some income targets with the associated changes in the production and trade structures. No integration is assumed in these models. The

Table 9.1 CONSUMPTION VALUES IN THE TARGET YEAR OF THE PLANNING PERIOD--SINGLE-COUNTRY MODELS

Sector	Indonesia	Malaysia	Philippines	Singapore	Thailand
	- - - - - - - - - millions of US$ - - - - - - - - - - - -				
1	-	-	4.26	-	-
2	933.65	-	68.21	-	-
4	-	10.00	8.53	-	3.97
5	407.41	-	63.94	-	95.27
6	25.46	-	-	-	23.82
7	5109.59	717.23	1402.52	234.50	2076.09
8	76.39	329.87	63.94	78.17	230.24
9	1672.08	567.28	2570.57	122.46	1758.52
11	50.93	-	12.7	-	19.85
12A	10991.57	727.22	2451.21	175.87	2786.64
12B	50.93	3563.64	6654.50	1614.13	4108.51
13	2232.26	629.76	1492.04	1016.16	1885.55
14	831.79	547.29	626.66	575.83	1044.00
15	704.48	444.83	409.25	161.54	7145.23
16	602.63	512.30	848.33	476.81	289.78
17	67.90	57.48	149.20	33.87	107.18
18	42.44	92.46	38.37	182.39	67.48
19	178.24	132.45	196.10	33.87	87.33
20	390.43	457.33	225.94	329.60	218.33
21	1493.83	322.38	1082.79	59.93	845.52
22	322.53	164.94	285.00	390.83	261.99
23	297.07	79.97	25.58	1.30	214.36
24	25598.89	11470.62	14617.73	3927.86	16303.04

integration model incorporates all the five member countries and can be used to examine the consequences of tariff reductions can also examine a nonintegration situation. The single-country and integration models can both be used to examine a preintegration situation. In the preintegration situation, we will determine whether the solutions are identical in all the variables and whether the total investment cost to achieve all fixed income targets for the region from the integration model is identical to the aggregate investment costs of the five single-country models.

In the integration model, a new variable were defined to denote intra-ASEAN trade flows, and the original export and import variables were redefined to denote extra-ASEAN trade flows. Structurally, changes in the integration model (relative to the single-country models) are in these variables only.

In the single-country model, the tariff component in the investment cost for export variables were computed from the tariff rates faced by each member country in the 18 major industrial countries. In the model, any export from Malaysia to Indonesia, for example, would incur the same tariff cost as would Malaysian exports to the United States. In the integration model, intraregional trade is differentiated from extraregional trade. The average tariff rates faced by each member country are distinct from nonmember countries. The different tariff rates for intraregional trade faced by any member countries and those in third countries (extraregional) are illustrated in Table A.16. As a consequence, the computed cost coefficients for the mutual trade variables (Table 8.4) are different from the exports in the single-country models. In view of this, since the tariff costs are not identical, the total investment costs in the two solutions may not necessary be the same.

Results at Preintegration Tariff Level

We shall compare the solutions of the single-country models and the integration model with no tariff reductions with respect to the production structures, trade variables, sectoral demand for investment goods and total investment cost. Since both the solutions purportedly represent a nonintegration situation, we shall note the important differences between the solutions.

The single-country model solutions were discussed in the previous section (Tables B.1 to B.5) and these are compared with the integration model solutions illustrated in Tables B.6 to B.10. Expansions of production capacities generally occur in the same production variables in the two model solutions. However, as the integration model distinguishes between intra and extraregional trade, exports and imports from member countries are differentiated into intra and extra-ASEAN trade flows.

Examination of the five member countries in the integration model at zero percentage tariff reduction reveals that production capacities increase in the same sectors. In Indonesia, however, rubber products (17) are now expanded to its limit rather than at an intermediate value. Trade flows remained the same. Export (import) sectors in the single-country models remain as export (import) sectors in the integration model. However, in the integration solution, the sector could export to and import from third countries and/or partner countries. If imports (as well as exports) are obtained from within and outside the region simultaneously, the value of the total trade is unchanged from single-country solutions in each sector.

The demands for investment goods in the final year of the plan period between the single-country models and integration model at zero tariff reduction rate are compared in Table 9.2. Since the PICORs for extra and intraregional trade are assumed to be identical, any differences in the demand for investment goods would be attributed to slight differences in the values of the expansion in production capacity and trade values. Generally, however, the differences are slight.

Table 9.2 COMPARATIVE DEMANDS FOR INVESTMENT GOODS IN THE FINAL YEAR OF THE PLAN PERIOD BETWEEN SINGLE-COUNTRY MODELS AND INTEGRATION MODEL AT NO TARIFF REDUCTION

Country / Sector	14	19	20	21	23	24
Indonesia						
SCM	21.8	545.9	4301.5	6271.6	34046.4	2599.8
IM	21.8	542.8	4294.3	6225.2	33790.0	2593.2
Malaysia						
SCM	236.3	236.3	1620.5	797.5	1967.3	236.3
IM	236.1	236.1	1619.5	685.6	1961.6	236.1
Philippines						
SCM	228.7	462.9	4690.6	1431.8	10168.9	3794.2
IM	228.7	462.9	4690.5	1346.3	10165.2	3794.1
Singapore						
SCM	188.2	-	1225.3	875.1	1368.6	184.0
IM	188.3	-	1221.5	637.2	1357.4	183.6
Thailand						
SCM	222.9	441.6	2966.2	3311.5	11762.0	1772.8
IM	222.9	441.6	2966.1	3212.5	11757.3	1772.7

Note:

SCM is Single-country model and IM is Integration model

The major difference between the two models is in the value of the objective function or the total investment cost required to achieve the income growth targets of the five ASEAN member countries. The summation of the five single-country models results in a value of $396,374.6 million compared to $388,333.7 million for the integration model at zero tariff reduction--a discrepancy of 2 percent. Each ASEAN member country in the single-country model differentiates itself from the rest of the world while in the integration model, the same country differentiates the rest of the world into regional and third countries. Although both models represent the no integration case, it would be more accurate to consider the integration model at zero reduction to be more representative of the no integration situation as it recognizes the tariff levels in neighboring countries. The model would be more complete if tariff rates of major trading countries of the partner countries were incorporated, but this would enlarge the model considerably. Nevertheless, both the models and their total investment costs will be used to compare the benefits when a nonintegration situation is compared to various rates of tariff reduction--including a free trade area situation.

Results at 100 Percent Tariff Reduction Rate

In order to examine the effects of preferential tariff liberalization arrangements among member countries, the ASEAN integration model was first solved with all internal tariffs abolished. Parametric solutions were subsequently generated with incremental intraregional tariffs imposed progressively at 10 percent margins. However, solutions at 0, 10, 30, 50 and 100 percent tariff rate reductions are only presented in Tables B.6 to B.10.

Tables B.11 to B.20 present the production, trade and investment activities in a free trade area situation for the final year of the plan period for each of the five countries, respectively. The base year values are also provided for comparison. Extra- and intra-ASEAN trade when mutual tariffs were completely abolished, are shown in greater detail in Tables B.11 to B.20. The destinations of each country's exports and imports from ASEAN countries are also identified.

Indonesia. Results for Indonesia (Tables B.6) as well as all other member countries (Tables B.7 to B.10) show that expansion of production capacities in all sectors in the free trade area situation remained unchanged when compared to a preintegration situation. However, some of the imports were obtained from member countries instead of from third countries. Imports in some sectors were entirely or partially sourced from partner countries. This occurred in other mining (11) from Philippines, and textiles, leather and products thereof (13) from Philippines, Singapore and Thailand. Intraregional exports of food, beverage and tobacco manufactures (12B) and rubber products (17) are increased at the expense of extraregional exports. Indonesia exports crude petroleum and natural gas (10) and food, beverage and tobacco manufactures (12B) to all member countries and rubber products (17) to all member countries except Malaysia (Table B.12). However, total imports and exports remained unchanged in these sectors. Demand for investment goods are identical except for a slight decrease in transport equipment (21).

Malaysia. For Malaysia (Table B.7), increases in production capacities are identical between the free trade area and preintegration situations except for transport equipment (21). Demand for investment goods likewise remained unchanged. Imports of other food crops (8), textiles, leather and products thereof (13), chemical products (16), nonmetallic mineral products (18) and machinery (20) were obtained exclusively from member countries (Table B.14). Other food crops (8) were imported from Thailand, textiles, leather and products thereof (13) from Philippines, chemical products (16) from Singapore, nonmetallic mineral products (18) from Philippines and machinery (20) from Singapore.

Intraregionally, Malaysia exports oil palm and coconuts (5) to all member countries except Indonesia; livestock, fishery and forestry products (9) to Philippines; and metal products (19) to Singapore (Table B.14).

Others. The comparative analysis of the free trade area and preintegration situations for the other partner countries, i.e., Philippines, Singapore and Thailand are similar and will not be elaborated beyond what has already been said about production capacities. Intraregional trade in some sectors partially or totally replaced extraregional trade, and demand for the investment goods remained largely unchanged.

Results at Various Rates of Tariff Reduction

Results for various rates of tariff reductions will be examined for Malaysia only. The effects of tariff rate reductions at 0, 10, 30, 50 and 100 percent on production, investment and trade are given in Table B.7.

Results of the integration model, when compared to a preintegration situation, show that a 10 percent across-the-board tariff reduction would have no effect whatsoever on the production, investment and trade variables. In fact, as explained earlier, the sectors which increased their production capacities were unchanged even when tariffs were totally abolished. Increases in production capacities occurred in the national sectors of construction (23) and services (24) and agriculture sectors (1 through 9). At 30 percent tariff reduction, food, beverage and tobacco manufactures (12B), which were previously imported from third countries, were now imported from Singapore (this result is not shown in Table B.7). The results at 50 percent tariff reduction were identical to the solution at 30 percent reduction rate. It is only at the 100 percent tariff reduction that intraregional trade increased at the expense of extraregional trade. This trend of intra-ASEAN replacing extra-ASEAN trade, either completely or partially by sectors, is also evident in the results of other member countries.

Trade Effects

Extraregional Trade

The extraregional exports and imports for all five member countries of ASEAN are presented in Table 9.3 for the free trade area situation. These data are also given in the tables of Appendix B. The Table shows that extra-ASEAN exports in the final year of the plan period ranged from $93 million for Malaysia to $10,147 million for Indonesia. Extra-ASEAN imports ranged from $3237 million for Malaysia to $31,197 million for Indonesia. All countries incur a trade deficit ranging from $1867 million for Malaysia to $21,050 million for Indonesia. ASEAN as a region, suffered a trade deficit of $52,902 million. It is apparent that extra-ASEAN exports are underestimated due to structural weaknesses of the model. World demand was not incorporated into the model which probably accounted for the low level of extra-regional exports. Furthermore, since capital is the only resource considered in the model, the capital-intensive manufacturing sectors are comparatively disadvantaged. The implications for comparative advantage and suggestions to improve the model are reviewed in the final section of this chapter.

Table 9.3 EXTRA-ASEAN TRADE AT 100 PERCENT TARIFF REDUCTION

Sector	Extra-ASEAN Exports						Extra-ASEAN Imports					
	IND	MAL	PHI	SIN	THA	Total	IND	MAL	PHI	SIN	THA	Total
	millions of US$											
1	2898.9	72.3	46.8	0	1069.8	4087.7	0	0	0	0	0	0
2	0	2.2	0	0	377.4	379.6	0	0	0	0	0	0
3	0	325.0	25.1	0	669.4	1019.5	0	0	0	0	0	0
4	54.9	4.6	21.3	0	508.7	589.6	0	0	0	0	0	0
5	0	71.4	0	0	0	71.4	0	0	0	0	0	0
6	0	0	0	0	0	0	55.4	103.1	0	78.0	0	236.5
7	0	0	0	0	0	0	1310.7	235.9	170.8	1059.7	0	2777.0
8	0	0	0	0	0	0	53.5	0	0	45.0	0	98.6
9	0	0	0	0	0	0	789.6	0	347.4	0	0	1137.1
10	5872.7	0	0	0	0	5872.7	0	0	0	0	0	0
11	0	0	0	0	0	0	203.7	0	0	0	0	203.7
12A	0	0	0	0	0	0	7248.6	423.7	620.0	128.4	1313.1	9733.8
12B	974.7	0	0	0	0	974.7	0	0	0	0	0	0
13	0	0	0	597.3	0	597.3	0	0	0	0	0	0
14	0	0	0	0	0	0	925.8	629.1	519.9	0	1775.5	3850.3
15	0	0	0	0	0	0	1820.7	862.8	849.4	802.8	9103.9	13439.6
16	0	0	0	92.7	0	92.7	0	0	0	0	0	0
17	345.8	894.7	0	0	0	1240.5	0	0	0	0	0	0
18	0	0	0	0	0	0	1977.6	0	206.5	287.4	0	2471.5
19	0	0	0	0	0	0	5024.8	0	2258.8	1018.1	2391.7	10693.5
20	0	0	0	0	0	0	6446.0	0	3739.1	0	1410.2	11595.2
21	0	0	0	0	0	0	5340.8	982.7	914.4	282.2	4070.7	11590.8
Total	10146.9	1370.2	93.2	690.0	2625.2	14925.5	31197.2	3237.3	9626.2	3701.5	20065.0	67827.3
Net Exports	-21050.3	-1867.1	-9533.0	-3011.5	-17439.8	-52901.8						

Several factors contributed to the low extra-ASEAN exports and hence evidence of comparative disadvantage. These factors include high domestic and regional demands, low production capacity limits and absence of world demands in the model.

In contrast, imports from third countries were more accurately depicted as regional demands were incorporated in the model. Values of imports for the region show that chemical products (15), transport equipment (20), machinery (21) and metal products (19) comprised almost 70 percent of total ASEAN imports (Table 9.4).

Table 9.4 EXTRA-ASEAN IMPORTS AT VARIOUS LEVELS OF TARIFF REDUCTION, BY COUNTRIES

Country	Tariff Reduction (%)				
	0	10	30	50	100
	- - - - - - millions of US$ - - - - - - - - - - -				
Indonesia	32,846.9	32,846.9	32,799.4	32,777.4	32,197.2
Malaysia	6,198.4	6,198.4	4,327.8	4,327.8	3,237.3
Philippines	10,501.8	10,501.8	10,502.8	10,501.8	9,626.2
Singapore	3,355.2	3,355.2	3,355.2	3,355.2	3,701.5
Thailand	23,741.5	23,741.5	23,741.5	23,741.5	20,065.0
ASEAN	76,661.3	76,661.2	74,725.6	75,705.6	67,827.3

Extra-ASEAN imports declined by $8834 million when all internal tariff barriers were abolished (Table 9.4). This declining trend is as expected as intraregional trade increased when internal barriers were reduced. The declining trend is reflected in all countries except Singapore (Table 9.4). The substitution of extraregional trade by intraregional trade was discussed in the previous section. The percentage of extra-ASEAN imports by sectors were fairly stable over the range of tariff reductions (Table 9.5). Chemical products (15), transport equipment (20), machinery (21) and metal products (19) remained the dominant sectors at all levels of tariff liberalization. This result reflected ASEAN's continued reliance on these imports due to the limited capacity expansion in these sectors. Given the economies of scale advantages in an enlarged market, it would be prudent to examine the feasibility of increasing the production capacities of these heavy industries on a regional level.

Intraregional Trade

The intra-ASEAN trade flows in a free trade area situation is shown in Table 9.6. The intraregional trade flows for all member countries at other rates of tariff reductions are presented in Tables B.21 (50 percent reduction) to B.24 (preintegration situation). These flows are given by country in Tables B.6 to B.20 at various tariff reduction levels. The comparative advantage in the region by sector can be gauged by the source of intra-ASEAN exports and extra-ASEAN exports. A comparatively disadvantaged sector is also inferred by importation in the sector, either from ASEAN or extra-ASEAN

Table 9.5 TOTAL EXTRA-ASEAN IMPORTS AT VARIOUS LEVELS OF TARIFF REDUCTION, BY SECTORS

	Tariff Reduction (% values in parenthesis)				
Sectors	0%	10%	30%	50%	100%
	- - - - - - - - - millions of US$ - - - - - - - - -				
1	-	-	-	-	-
2	-	-	-	-	-
3	-	-	-	-	-
4	-	-	-	-	-
5	-	-	-	-	-
6	236.5	236.5	236.5	236.6	236.5
	(0.31)	(0.31)	(0.32)	(0.32)	(0.35)
7	2777.0	2777.0	2777.0	2777.0	2777.0
	(3.62)	(3.62)	(3.72)	(3.72)	(4.09)
8	98.6	98.6	98.6	98.6	98.6
	(0.13)	(0.13)	(0.13)	(0.13)	(0.15)
9	1221.0	1221.0	1558.1	1137.0	1137.0
	(1.59)	(1.59)	(1.55)	(1.52)	(1.68)
10	-	-	-	-	-
11	445.5	445.5	445.5	445.5	203.7
	(0.58)	(0.58)	(0.60)	(0.60)	(0.30)
12A	9733.8	9733.8	9733.8	9733.8	9733.8
	(12.70)	(12.70)	(13.03)	(13.03)	(14.35)
12B	720.0	720.0	720.0	720.0	-
	(0.94)	(0.94)	(0.96)	(0.96)	
13	1813.1	1813.1	1359.1	1359.1	-
	(2.37)	(2.37)	(1.82)	(1.82)	
14	3851.8	3851.8	3851.1	3851.1	3850.3
	(5.02)	(5.02)	(5.16)	(5.16)	(5.68)
15	13440.4	13440.4	13440.4	13440.4	13439.6
	(17.53)	(17.53)	(17.99)	(17.99)	(19.81)
16	1947.1	1947.1	1947.1	1947.1	-
	(2.54)	(2.54)	(2.61)	(2.61)	
17	132.1	132.1	132.1	132.1	-
	(0.17)	(0.17)	(0.18)	(0.18)	
18	2473.5	2473.5	2472.6	2472.6	2471.5
	(3.23)	(3.23)	(3.31)	(3.31)	(3.64)
19	10701.0	10701.0	10699.5	10699.5	10693.5
	(13.96)	(13.96)	(14.32)	(14.32)	(15.77)
20	15125.0	15125.0	13784.4	13784.4	11595.2
	(19.73)	(19.73)	(18.25)	(18.45)	(17.10)
21	11945.7	11945.7	11867.1	11867.1	11590.8
	(15.58)	(15.58	(15.89)	(15.89)	(17.09)
	76661.7	76661.7	74725.6	74703.6	67827.3
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Table 9.6 INTRA-ASEAN TRADE AT 100 PERCENT TARIFF REDUCTION, BY SECTOR AND BY COUNTRY

	Intra-ASEAN Exports						Intra-ASEAN Imports					
Sector	Indonesia	Malaysia	Philippines	Singapore	Thailand	Total	Indonesia	Malaysia	Philippines	Singapore	Thailand	Total
	millions of US$											
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	151.3	151.3	136.0	0	15.3	0	0	151.3
3	0	0	0	0	215.9	215.9	215.5	0	0	0.4	0	215.9
4	0	0	0	0	0	0	0	0	0	0	0	0
5	306.1	75.7	0	0	0	381.8	0	0	333.7	15.5	32.6	381.8
6	0	0	2.7	0	10.9	13.6	0	13.6	0	0	0	13.6
7	0	0	0	0	210.6	210.6	0	210.6	0	0	0	210.6
8	0	0	38.3	0	188.2	226.5	0	139.9	0	86.6	0	226.5
9	0	21.1	0	0	251.1	273.2	0	0	84.0	189.3	0	273.2
10	7319.6	0	0	0	0	7319.6	0	490.3	1698.2	3676.3	1454.8	7319.6
11	0	0	1517.4	0	0	1517.4	241.9	348.7	0	47.0	879.8	1517.4
12A	0	0	0	0	0	0	0	0	0	0	0	0
12B	2891.0	0	0	0	0	2891.0	0	1416.1	361.9	754.9	358.1	2891.0
13	0	0	512.3	691.9	609.2	1813.1	1359.1	454.0	0	0	0	1813.1
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	3081.3	0	3081.3	1134.5	712.3	264.2	0	970.3	3081.3
17	521.7	0	0	0	0	521.7	0	0	128.9	389.6	3.3	521.8
18	0	0	0	0	443.8	443.8	0	387.2	56.6	0	443.8	
19	0	143.7	0	0	0	143.7	0	0	0	143.7	0	143.7
20	0	0	0	3528.3	0	3528.3	0	1339.5	0	0	2188.8	3528.3
21	0	0	0	0	0	0	0	0	0	0	0	0
	11038.4	240.5	2070.6	7301.1	2082.1	22732.8	3087.0	5512.2	2886.2	5359.8	5887.6	23732.8

sources.[2] Thailand seems to have comparative advantage in the agriculture sectors, exporting cassava (2), natural rubber (3), fiber crops (6), other food crops (7), other commercial crops (8), and livestock, fish and forestry products (9) to other ASEAN countries. Malaysia, being a major natural rubber producer, exports to countries outside the region although she does not export to countries within the region. Indonesia exports crude petroleum and natural gas (10) to all other ASEAN countries. Indonesia is also the sole exporter in food, beverages and tobacco products (12B) while Philippines, Singapore and Thailand exports textiles (13) to Indonesia. Malaysia obtains all her textiles from Singapore. Examination of shadow prices indicates that of the three exporters, the Philippines ranks ahead of Thailand and Singapore. Singapore is the sole exporter of petroleum products (16), and Indonesia of rubber products (17). Thailand exports nonmetal products (18) to Malaysia and Singapore while Malaysia exports metal products (19) to Singapore. Lastly, Singapore exports machinery (20) to Malaysia and Thailand.

In terms of total value traded, intra-ASEAN trade increased from $14,265 million at current tariff levels to 22,733 million with no tariffs (Table 9.7). Intra-ASEAN trade as a proportion of total trade increased from 12.5 to 21.6 percent. These percentages are, however, overestimated due to the underestimation of extra-ASEAN exports as mentioned earlier.

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[2] The ranking in comparative advantage inferred from dual values will be discussed in a later section.

Table 9.7 INTRA-ASEAN TRADE AT VARIOUS LEVELS OF TARIFF REDUCTIONS, BY SECTOR (in millions of US$)

Sectors	0%	10%	30%	50%	100%
1	0	0	0	0	0
	(-)	(-)	(-)	(-)	(-)
2	151.3	151.3	151.3	151.3	151.3
	(1.1)	(1.1)	(0.9)	(0.9)	(0.7)
3	215.9	215.9	215.9	215.9	215.9
	(1.5)	(1.5)	(1.3)	(1.3)	(0.9)
4	0	0	0	0	0
	(-)	(-)	(-)	(-)	(-)
5	381.8	381.8	381.8	381.8	381.8
	(2.7)	(2.7)	(2.4)	(2.4)	(1.7)
6	13.6	13.6	13.6	13.6	13.6
	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
7	210.6	210.6	210.6	210.6	210.6
	(1.5)	(1.5)	(1.3)	(1.3)	(0.9)
8	226.5	226.5	226.5	226.5	226.5
	(1.6)	(1.6)	(1.4)	(1.4)	(1.0)
9	189.3	189.3	252.1	273.2	273.2
	(1.3)	(1.3)	(1.6)	(1.7)	(1.2)
10	7319.6	7319.6	7319.6	7319.6	7319.6
	(51.3)	(51.3)	(45.4)	(45.3)	(32.2)
11	1274.5	1274.5	1274.5	1274.5	1517.4
	(8.9)	(8.9)	(7.9)	(7.9)	(6.7)
12A	0	0	0	0	0
	(-)	(-)	(-)	(-)	(-)
12B	2171.0	2171.0	2171.0	2171.0	2891.0
	(15.2)	(15.2)	(13.5)	(13.4)	(12.7)
13	0	0	454.1	454.1	1813.1
	(-)	(-)	(2.8)	(2.8)	(8.0)
14	0	0	0	0	0
	(-)	(-)	(-)	(-)	(-)
15	0	0	0	0	0
	(-)	(-)	(-)	(-)	(-)
16	1134.5	1134.5	1134.5	1134.5	3081.3
	(8.0)	(8.0)	(7.0)	(7.0)	(13.6)
17	389.6	389.6	389.6	389.6	521.7
	(2.7)	(2.7)	(2.4)	(2.4)	(2.3)
18	443.8	443.8	443.8	443.8	443.8
	(3.1)	(3.1)	(2.8)	(2.7)	(2.0)
19	142.4	142.4	143.2	143.2	143.7
	(1.0)	(1.0)	(0.9)	(0.9)	(0.6)
20	0	0	1339.9	1339.9	3528.3
	(-)	(-)	(8.3)	(8.3)	(15.5)
21	0	0	0	0	0
Total	14264.40	14264.40	16122.00	16143.10	22732.80
Intra-ASEAN trade as % of world trade	12.47	12.47	14.34	14.34	21.55

Table 9.7 also shows the importance of the sectors in the intra-ASEAN trade at various levels of tariff reduction. Most of the regional trade is dominated by crude petroleum and natural gas (10), which comprised about one-half of total regional trade at preintegration tariff levels and about one third in a free trade area situation. Textiles (13), machinery (20) and petroleum products (16) gained significantly in the share of regional trade when tariffs were reduced from a 50 percent to 100 percent. Other important sectors are food, beverage and tobacco products (12B) and other mining (11).

The volume and direction of mutual trade flows within ASEAN are shown in Tables B.25 to B.28. The intra-ASEAN trade at the free trade area situation (Table B.25) shows that Indonesian exports totaled $11,038 million and were comprised mainly of crude petroleum and natural gas (10) and food, beverage and tobacco manufactures (12B). Total imports amounted to $3,087 million and consisted mainly of textiles, leather and products thereof (13) and petroleum and its products (16). Malaysia's exports to her regional partners were small in comparison at $240 million and total imports were $5512 million. These imports consisted mainly of food, beverages and tobacco manufactures (12B) and machinery products (20). Philippines main exports and imports were other mining (11) and crude petroleum and natural gas (10), respectively. Results of the model reveal that Singapore, despite its smallness in size and measured in gross domestic product and population, was a major regional trading partner. Singapore exported $7301 million worth of products, mainly machinery (20) and petroleum and its products (16), and imported $5360 million--comprised mostly of crude petroleum and natural gas (10). Thailand exported over $2082 million, chiefly agricultural products, and importing $5888 million. Major imports were machinery (20) and crude petroleum and natural gas (10).

The intraregional overall trade balance over the range of tariff reductions are shown in Table 9.8. A consequence of economic integration is the uneven distribution of costs and benefits. Previous experiences with integration arrangements have revealed that distributional benefits will concentrate in those countries and regions which are more efficient and best placed to take advantage of the new opportunities. One indication of this trend is reflected in the regional trade balances when tariffs are progressively reduced. It is not surprising that the trade balance of Singapore, the most developed member in the region with the highest GDP per capita, improved at the expense of other members--particularly in the free trade area situation. Singapore's trade balance improved from a deficit of $4557 million at the preintegration tariff level to a surplus of $1,941 million when all tariffs were abolished. Indonesia and Philippines were generally unaffected at all levels of tariff reduction while the trade balance of Malaysia and Thailand worsened. In contrast, Thailand's trade position did not worsen until all tariffs were reduced while Malaysia's trade deficit was quite pronounced, even at 30 percent rate of tariff reduction.

Table 9.8 INTRA-REGIONAL TRADE BALANCES AT VARIOUS RATES OF TARIFF REDUCTION

Country	Tariff Reduction Rates				
	0%	10%	30%	50%	100%
	millions of US$				
Indonesia	8700.32	8700.32	8637.45	8616.36	7951.47
Malaysia	-2454.52	-2454.52	-4248.42	-4227.33	-5271.70
Philippines	-731.85	-731.85	-277.83	-277.83	-815.44
Singapore	-4557.20	-4557.20	-3217.32	-3217.32	1941.30
Thailand	-956.75	-956.75	-893.88	-893.88	-3805.52

The objective function values of the optimal solutions at various levels of tariff reduction provides a measure of whether trade liberalization is beneficial in terms of reduced investment outlays.

The total elimination of regional tariff barriers resulted in total savings of $3658 million (Table 9.9). These savings are in regional investment expenditures when comparing preintegration and the free trade area situation. The amount of total savings is however, only 0.80 percent of total investment costs.[3] The result obtained is generally consistent with several empirical studies

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[3] When the summation of the single-country models were taken to depict a no-integration situation, the percentage of savings over total investment cost came to 2.95%. However, it was reasoned earlier that the integration model at zero percentage tariff reduction level better reflects a no-integration situation as it takes into consideration the tariff levels prevailng in member countries prior to integration plans.

Table 9.9 TOTAL ASEAN INVESTMENT EXPENDITURES AT VARIOUS LEVELS OF TARIFF REDUCTION

Tariff Reduction (%)	Total Investment Expenditure	Marginal Saving	Cumulative Saving
	- - - - - millions of US $ - - - - - - - -		
0 (pre-integration)	388,333.7	-	-
10	388,197.5	136.2	136.2
20	388,061.2	136.3	272.5
30	387,895.8	165.4	437.9
40	387,690.3	205.5	643.4
50	387,484.6	205.7	849.1
60	387,169.4	315.1	1,164.2
70	386,805.7	363.8	1,528.0
80	386,304.3	501.4	2,029.4
90	385,721.8	582.4	2,611.8
100 (FTA)	384,675.6	1,046.2	3,658.0

previously done to measure static gains from economic integration (Jaber 1971, Thorbecke and Pagoulatos 1975).

Dual Values and Comparative Advantage Implications

The dual values of the production activities in the model can be used to infer comparative advantage by sectors. The dual values for the international production activities and constraints are presented for the single-country models (no integration) in Table 9.10 and the economic integration model with tariffs completely abolished in Table 9.11.

Generally, the comparative advantage of each sector can be gauged by the source of extra- and intra-ASEAN exports. A comparatively disadvantaged sector is therefore inferred by the imports of commodities or products by that sector, either from member ASEAN countries or extra-ASEAN sources. If no production

Table 9.10 DUAL VALUES FOR PRODUCTION ACTIVITIES ($(^rx^h)$) AND PRODUCTION CONSTRAINTS -- SINGLE-COUNTRY MODEL

Sector	Indonesia		Malaysia		Philippines		Singapore		Thailand	
	Dual	Rank	Dual	Rank	Dual	Rank	Dual	Rank	Dual	Rank
1	5.73	7	.52	6	5.97	7	-	-	5.44	4
2	6.83	2	.22	9	6.83	3	-	-	5.63	3
3	6.29	5	1.12	4	5.47	8	.57	4	5.99	2
4	4.64	9	.39	7	5.29	9	-	-	5.01	7
5	4.98	8	1.09	5	7.34	1	(1.51)	21	6.92	1
6	7.42	1	2.31	1	6.05	5	.22	7	5.06	6
7	6.57	3	2.19	2	6.91	2	.59	2	5.29	5
8	6.37	4	1.96	3	6.04	6	.59	3	2.60	8
9	6.26	6	.36	8	6.35	4	.48	5	2.32	9
10	3.55	10	-	-	2.38	10	(.51)	-	-	-
11	3.36	11	(.82)	14	1.01	18	(1.50)	16	1.68	12
12A	(.001)	17	(.47)	11	1.05	17	(.14)	14	.60	16
12B	.34	14	(.26)	10	1.79	14	(.74)	15	2.14	10
13	(21.98)	22	(3.57)	21	1.87	12	.26	10	1.63	13
14	.24	15	(.73)	12	1.71	15	*	14	1.62	14
15	(.07)	18	(1.77)	17	.48	20	(.10)	12	(.09)	19
16	(.53)	20	(2.58)	20	(1.25)	22	(3.45)	18	(.95)	20
17	*	16	(.78)	13	1.85	13	(.10)	12	2.07	11
18	(1.54)	21	(2.21)	19	1.88	11	(.07)	11	.66	15
19	(.11)	19	(2.00)	18	1.01	19	.02	9	*	18
20	.68	13	(.83)	15	1.08	16	.11	8	.53	17
21	2.20	12	(1.49)	16	*	21	1.31	1	(1.01)	21

Table 9.11 DUAL VALUES FOR PRODUCTION ACTIVITIES ($^{r}X^{h}$) AND PRODUCTION CONSTRAINTS -- FREE TRADE AREA SITUATION

Sector	Indonesia		Malaysia		Philippines		Singapore		Thailand	
	Dual	Rank	Dual	Rank	Dual	Rank	Dual	Rank	Dual	Rank
1	5.72	7	.51	7	5.97	7	-	-	5.44	5
2	6.52	3	.21	9	6.54	3	-	-	5.60	3
3	5.99	6	1.10	4	5.46	8	.42	5	5.99	2
4	4.63	9	.40	8	5.29	9	-	-	5.01	7
5	5.00	8	1.08	5	7.07	1			6.65	1
6	7.42	1	2.31	1	6.35	5	.35	6	5.35	6
7	6.56	2	2.19	2	6.91	2	.66	2	5.59	4
8	6.37	4	1.95	3	6.34	6	.66	3	2.81	8
9	6.26	5	.69	6	6.38	4	.62	4	2.67	9
10	3.54	10	-	-	2.02	10	-	-	-	-
11	3.36	11	(.84)	14	1.44	15	(1.50)	16	1.68	12
12A	(.001)	17	(.48)	10	1.05	18	(.08)	13	.60	16
12B	.35	14	(.70)	11	1.42	16	(.30)	15	1.67	13
13	(22.11)	22	(3.73)	21	2.00	11	.30	7	1.74	11
14	.24	15	(.71)	12	1.72	13	*	9	1.59	14
15	(.07)	18	(1.71)	17	.53	20	(.06)	12	(.09)	19
16	(.71)	20	(2.55)	20	(1.25)	22	(3.16)	17	(.42)	20
17	.13	16	(.79)	13	1.53	14	(.30)	14	1.75	10
18	(1.53)	21	(2.20)	19	1.87	12	(.05)	11	1.06	15
19	(.11)	19	(1.79)	18	1.00	19	*	10	*	18
20	.68	13	(.87)	15	1.05	17	.25	8	.52	17
21	2.20	12	(1.54)	16	*	21	1.34	1	(.98)	21

capacity constraints were imposed on a sector and the sector enjoyed comparative advantage, production in the national sectors and in one of the international sectors would increase. Even with limitations on production capacity imposed, the implied comparative advantages of the sectors by countries could be determined from the values of the dual available. To achieve the income growth targets, production capacities were expanded according to the comparative advantage as implied in the dual values. Table 9.10 shows the dual values. These values provide an estimate of the rate of change in the objective function when effective production capacity constraints are relaxed. If a variable is not in the solution, the dual values provide an estimate (shown in parentheses) of the rate of change in the objective function when the variable is included in the solution. The ranking of the sectors in Tables 9.10 and 9.11 is based on dual values. Since each country has an income growth target, the expansion of production capacities will satisfy the income target requirement via the value added for each sector. Table 9.10 shows that in the last sectors where production capacities were expanded (the transport sector (21) in Philippines, lumber (14) in Singapore and metal products (19) in Thailand), capacities were not expanded to the maximum allowed. For the region as a whole, given that capital in the only limiting factor considered, the agricultural sectors enjoyed comparative advantage over the nonagricultural sectors. The more capital-intensive sectors (nonmetallic, metallic, chemical and petroleum products), were the most comparatively disadvantaged.

It is generally true that countries will export those commodities for which they have a comparative advantage. Production capacities will be expanded in sectors according to comparative advantage, but international sectors enjoying comparative advantage with expansion of production capacity limits do not necessarily become export sectors.

Examination of the export and import sectors provides the following observations. Export can occur in sectors which have comparative advantage and whose production capacity is expanded to the limit, e.g., the agriculture sectors of Thailand.

Exports can also occur in sectors with no expansion from their original capacity. Commodities may be exported from a comparatively disadvantaged sector because original capacities in the base year of the planning period exceed total domestic final demand in the final year of the planning period, e.g., rubber products (17) and metal products (19) from Malaysia and petroleum products (16) from Singapore.

On the other hand, imports can occur in comparatively advantaged sectors. This may result because the production capacity expansion and base year net capacities are less than domestic demand, hence the need to import. If production capacity limits were not constrained, greater specialization would result and total investment cost to achieve income growth would be less.

The dual values for the free trade area situation (Table 9.11) are very similar with only minor differences in the values and ranking in terms of comparative advantage. Production capacity expansions according to comparative advantage occurred in the same sectors with one exception. The production capacity of metal products (19) in Singapore was expanded to the limit in the single-country model, and to less than the limit in the free trade situation. Inter-country comparisons of a sector could be but were not made but due to a lack of confidence in the values of the PICORs.

Economic integration enables member countries to allocate their scare resources to those sectors which have comparative advantage, and which contribute the most to their respective income targets.

Examination of the effects of tariff rate reductions in the previous sections shows that total investment costs were reduced to reach the same income targets. However, the model results did not exhibit any increased degree of specialization, even when regional tariffs were totally abolished. This result implies that the savings in total investment expenditures at various tariff reductions were achieved through the substitution of intraregional trade for extraregional trade. Such a substitution came about as a result of a reduction of the tariff cost component of the investment in transportation. Transportation costs in intraregional trade flows were explicitly incorporated in terms of investment costs and tariff costs. Moreover, substitution of intraregional for extraregional trade can occur as a result of any of the following:

1. a decrease in costs in the producing country of the integration area,
2. an increase in the cost coefficient of the production variable in third countries, and/or
3. an increase in the costs of import trade flow from third countries.

Examination of (3) could possibly reveal the level of tariffs the integration partners should impose on the imports from third countries in order to promote intraregional trade. This possibility could be analyzed with the model. However, the analysis of an imposition of a common external tariff on third country was not a part of this study.

A comparison of the dual values of the trade variables as they appear in the final tableau of the single-country models with their corresponding tariff-cost coefficients, could provide insights into whether the level of tariffs imposed by third countries are prohibitive. The dual values of the nonbasic export variables and their corresponding tariff-cost coefficients are presented in Table 9.12. Comparisons of the dual values of the nonbasic export variables with their corresponding tariff-cost coefficients reveal that the tariffs imposed by third countries were not prohibitive. At most, the tariffs imposed by third

Table 9.12 SIMPLEX MULTIPLIERS OF THE INTERNATIONAL TRADE VARIABLE FOR SINGLE-COUNTRY MODELS, BY SECTORS AND CORRESPONDING TARIFF COSTS OF THIRD COUNTRIES

	Indonesia		Malaysia		Philippines		Singapore		Thailand			Indonesia		Malaysia		Philippines		Singapore		Thailand	
X	Dual	T.C.	Dual	T.C.	Dual	T.C.	Dual	T.C.	Dual	T.C.	M	Dual	T.C.	Dual	T.C.	Dual	T.C.	Dual	T.C.	Dual	T.C.
1	BAS	.09	BAS	.06	BAS	.09	-	-	BAS	.09	1	.92	.40	1.19	.40	.99	.40	BAS	.40	1.05	.40
2	.92	.09	BAS	.06	.09	.09	-	-	BAS	.09	2	BAS	.40	1.19	.40	BAS	.40	BAS	.40	1.05	.40
3	.87	.05	BAS	.04	BAS	.05	1.03	.05	BAS	.05	3	.01	.40	1.17	.40	.95	.40	BAS	.40	1.05	.40
4	BAS	.09	BAS	.06	BAS	.99	-	-	BAS	.09	4	.92	.40	1.19	.40	.99	.40	BAS	.40	1.05	.40
5	BAS	.08	BAS	.06	.98	.08	1.03	.08	1.05	.08	5	.91	.40	1.19	.40	BAS	.40	BAS	.40	1.05	.40
6	.92	.09	1.19	.06	BAS	.09	1.03	.09	BAS	.09	6	BAS	.40	BAS	.40	.99	.40	BAS	.40	1.05	.40
7	.92	.09	1.19	.06	.99	.09	1.03	.09	BAS	.09	7	BAS	.40	BAS	.40	BAS	.40	BAS	.40	1.05	.40
8	.92	.09	1.19	.06	BAS	.09	1.03	.09	BAS	.09	8	BAS	.40	BAS	.40	.99	.40	BAS	.40	1.05	.40
9	.92	.09	BAS	.06	.99	.09	1.03	.09	BAS	.09	9	BAS	.40	1.19	.40	BAS	.40	BAS	.40	1.05	.40
10	BAS	.16	1.27	.14	1.11	.21	-	-	-	-	10	.99	.40	BAS	.40	BAS	.40	BAS	.40	-	-
11	.86	.03	1.16	.03	BAS	.21	1.03	.03	1.00	.04	11	BAS	.40	BAS	.40	1.11	.40	BAS	.40	BAS	.40
12A	1.02	.19	1.26	.13	1.04	.14	1.03	.15	1.10	.14	12A	BAS	.40	BAS	.40	BAS	.40	BAS	.40	BAS	.40
12B	BAS	.19	1.26	.13	1.04	.14	1.03	.15	1.10	.14	12B	1.02	.40	BAS	.40	BAS	.40	BAS	.40	BAS	.40
13	4.81	3.98	1.75	.62	BAS	.20	BAS	.21	BAS	.20	13	BAS	.40	BAS	.40	1.10	.40	1.03	.40		
13	4.81	3.98	1.75	.62	BAS	.20	BAS	.21	BAS	.20	13	BAS	.40	BAS	.40	1.10	.40	1.03	.40	1.16	.40
14	1.16	.33	1.31	.18	1.10	.20	1.03	.10	1.16	.20	14	BAS	.40	BAS	.40	BAS	.40	BAS	.40	BAS	.40
15	1.26	.43	1.38	.25	1.25	.35	1.03	.14	1.31	.35	15	BAS	.40	BAS	.40	BAS	.40	BAS	.40	BAS	.40
16	1.05	.22	1.30	.17	1.08	.18	BAS	.18	1.14	.18	16	BAS	.40	BAS	.40	BAS	.40	1.03	.40	BAS	.40
17	BAS	.12	BAS	.09	1.03	.13	1.03	.17	1.09	.13	17	.95	.40	1.22	.40	BAS	.40	BAS	.40	BAS	.40
18	1.38	.55	1.39	.26	1.08	.18	1.03	.16	BAS	.18	18	BAS	.40	BAS	.40	BAS	.40	BAS	.40	1.14	.40
19	.92	.09	BAS	.06	.97	.07	1.03	.05	1.03	.17	19	BAS	.40	1.19	.40	BAS	.40	BAS	.40	BAS	.40
20	1.12	.29	1.33	.20	1.16	.26	BAS	.12	1.22	.26	20	BAS	.40	BAS	.40	BAS	.40	1.03	.40	BAS	.40
21	.97	.14	1.34	.21	1.18	.28	1.03	.13	1.24	.28	21	BAS	.40	BAS	.40	BAS	.40	BAS	.40	BAS	.40

Note: T.C. = Tariff Cost
X = Export Sectors
M = Import Sectors
BAS = Basic

countries on Indonesia's textile sector (13) amounted to 83 percent of the corresponding dual values.

The same comparisons can be made with regard to the investment cost part of the cost coefficients of the export trade variables. All dual values of the nonbasic export variables are larger than the values of the investment cost (0.4) of the cost coefficients. These comparisons indicate that the optimum solution of the single-country models would be, to some extent, insensitive to different assumptions with respect to the assumed values of the PICORs of export trade flows.

As for the import variables, except for Indonesia's natural rubber sector (3), the dual values (Table 9.12) are similarly larger than the corresponding cost coefficient (0.4). These results indicate that the optimum solution of the single-country models would be insensitive to different assumptions with respect to the assumed values of the PICORs of import trade flows.

A similar comparison of the dual values of the extra- and intraregional trade variables with their corresponding cost coefficients can determine the increase in total investment cost if these trade flows were introduced into the solution to gain greater specialization. The case for Malaysia will only be examined here. The dual values for the extra and intraregional trade variables are presented in Table 9.13. The dual values for the other member countries are presented in Tables B.29 to B.32. The dual values for Malaysia's extra-ASEAN export trade sectors show that the export of livestock, fishery and livestock products

Table 9.13 MALAYSIA: SIMPLEX MULTIPLIERS OF THE INTERNATIONAL TRADE VAIABLES: EXTENDED INTEGRATION MODEL -- FREE TRADE AREA SITUATION

Sector	Extra-ASEAN		Intra-ASEAN Exports to				Intra-ASEAN Imports from			
	Export	Import	IND	PHI	SIN	THA	IND	PHI	SIN	THA
1	basic	1.20	.65	.72	1.46	.77	.89	.89	.27	.89
2	basic	1.20	.03	.03	.03	.77	1.50	1.57	1.70	.89
3	basic	1.18	.05	.70	.05	.79	1.48	.91	1.68	.89
4	basic	1.20	.65	.72	.03	.79	.89	.89	1.70	.89
5	basic	1.20	.62	basic	basic	basic	.92	1.60	1.73	1.66
6	1.20	basic	.92	1.60	.92	1.66	.61	basic	.81	basic
7	1.20	basic	.92	.92	.692	1.66	.61	.68	.81	basic
8	1.20	.002	.92	1.60	.92	1.66	.61	(..)	.81	basic
9	.28	.92	.001	basic	( )	.74	1.53	1.60	1.73	.92
10	.90	.38	1.53	.92	.92	.92	basic	.69	.81	.74
11	1.16	.006	.92	1.60	.92	.92	.62	basic	.81	.74
12A	1.27	basic	.92	.92	.92	.92	.961	.68	.81	.74
12B	.86	.41	1.53	.92	.92	.92	basic	.69	.81	.74
13	1.54	.22	.92	1.60	1.73	1.66	.62	(..)	basic	(..)
14	1.30	basic	.92	.92	1.01	.92	.61	.68	.72	.74
15	1.39	basic	.92	.92	.92	.92	.61	.68	.81	.74
16	1.09	.22	.92	.92	1.73	.92	.62	.69	basic	.74
17	basic	1.23	.65	.03	.03	.03	.89	1.57	1.70	1.63
18	1.40	.002	.92	.92	.92	1.66	.61	.68	.81	basic
19	.28	.92	.004	.003	basic	.001	1.53	1.60	1.73	1.65
20	1.34	.003	.92	.92	1.73	.92	.61	.68	basic	.74
21	1.35	basic	.92	.92	.92	.92	.61	.68	.81	.74

(9) and rubber products (19) would only increase the total cost slightly. The marginal increase is not surprising because with tariffs abolished, the commodities which were originally exported in a preintegration situation (basic variables) are now exported to Philippines and Singapore, respectively. The export of the other nonbasic export sectors would incur greater cost increases as indicated in column 1 of Table 9.13. Imports of other commercial crops (8), crude petroleum and natural gas (10), other mining (11), textiles (13), petroleum products (16), nonmetallic products (18) and machinery (20) from third countries instead of member countries under the FTA situation would result in small marginal increases in total cost. The commodities of these sectors were all imported in the single-country model. This is also equivalent to saying that a reduction of the investment cost by more than the value of the dual for the respective sectors would introduce these import sectors into the optimal solution.

Malaysia, in the free trade area situation, exports livestock (9) to Philippines, and metal products (19) to Singapore. A reduction of more than .001 in the direct cost coefficient of livestock (19) would enable Malaysia to export to Indonesia. Similarly, a reduction in the direct cost coefficient by more than the dual value shown for the respective sectors would enable Malaysia to export cassava (2), natural rubber (3), sugar cane (4), rubber products (17) and metal products (19) to some or all of her regional partners.

Summary of Results and Suggestions for Model Improvement

Results of the integration model reveal that the magnitude of gains in terms of lower investment costs when intraregional tariffs are completely abolished over a nonintegration situation is $3658 million or less than one percent of total cost. Although this result is consistent with several empirical studies in the measurement of static gains from economic integration, the savings were achieved through the substitution of intraregional trade for extraregional trade. The beneficial effects of economic integration can come about not only through the substitution of mutual trade flows for trade with third countries, but also through increased opportunities for specialization.

The model results show a lack of specialization among partner countries. This lack of specialization could be attributed to a variety of reasons. Due to data limitations, some of the cost coefficients, such as that of Thailand and Philippines, and the investment costs (PICORs) of the extra and intraregional trade flows, are assumed to be the same in all 5 countries. The investment cost were also assumed to be the same among sectors. These assumptions reduce the complementarities among the economies (Mennes, 1973:40).

The second reason why the results show a lack of specialization might be due to the sectoral production expansion constraints imposed. Sectors having comparative advantage were expanded to the limit and if domestic demand exceeds production capacities, imports occurred. If the limits of sectoral production capacities were expanded further, greater opportunities for specialization would occur. Production capacities were constrained to reflect actual ability to increase capacities during the plan period and also to be sensitive to the desire of countries for balanced growth.

A consequence of economic integration is the uneven distribution of benefits and costs. The trade balances of Indonesia and Philippines were generally unaffected at all levels of tariff rate reductions. Singapore's trade balance improved, however, that of Malaysia and Thailand worsened.

Although the model can indicate how production and trade structures could be affected by tariff reductions, its usefulness and predictability can be further enhanced. The model assumes that capital is the only scarce factor of production and economies of scale do not exist. Inclusion of other factors such as labor would better reflect the real world. Incorporation of economies of scale in investment costs could be represented by a constant elasticity capacity cost function (Mennes, 1973:98). Extraregional exports were underestimated because extraregional (rest of the world) demands were absent in the model. A suggestion would be to expand the model further to include the rest of the world. This would require further data such as an aggregated transactions matrix, intermediate and final sectoral demands and investment costs. A simpler way would be to introduce extraregional demands as a minimum constraint into the model or incorporate the projected growth of external demand of ASEAN products. This procedure is less sophisticated, more restrictive and forces into the solution a minimum level of sectoral output. The model did not depict intraindustry trade. To overcome this, disaggregation of sectors by product lines could conceptually be accomplished but would greatly increase the size of the model and the data requirements.

CHAPTER X
SUMMARY AND CONCLUSIONS

Summary

Economic Integration

Since 1960, numerous developing country groupings have been established with the aim of achieving closer economic cooperation and integration. The integrative framework of these groupings were modelled after the European Economic Community (EEC) and the European Free Trade Area (EFTA) (Nugent, 1986).

The expected gains from integration, derived from the Theory of Customs Union, is based on comparative static effects. By reducing tariffs and/or relaxing quantitative restrictions, the theory centers on the trade creation and diversion effects. These effects have been evaluated to be more beneficial the more competitive and less complementary the economies of the members, the larger the integrated area, the more prohibitive the transport costs between members and non-members, the higher the original tariff walls and the lower the common external tariff (Meade, 1956).

During the sixties there was a proliferation of economic cooperation schemes among developing countries. Some economists considered the aspects of economic integration in less developed economies within the framework of orthodox theory (Meier, 1960 and Allen, 1961). Most of the recent studies, however, suggest that economic integration should emphasize the dynamic rather than static effects in evaluating the desirability of economic integration among developing countries. Emphasis should be on the structure of future rather than present production and consumption patterns (Jaber, 1971).

Economic integration between developing countries should not be treated as simply a tariff issue. It should consider other aspects such as their international trading position and economic growth and development. Orthodox integration theory when applied to developing countries has been widened to include industrialization. Industrialization has been such an important goal that some economists have considered it as a public good (Cooper and Massell, 1965 and Robson, 1980). Anyway, it is becoming increasingly evident that the orthodox theory of integration is less applicable to developing countries.

Economic cooperation is a way to overcome a narrow domestic market. Member states can take advantage of an enlarged regional market with increased industrial capacity. Integration enables import substitution policies to be continued and extended at the regional level with a potential for reduced costs. Industrialization behind a common tariff wall in conjunction with trade liberalization enables member countries to take advantage of economies of scale and external effects. In addition to these effects, integration of national markets can intensify competition and result in a higher overall level of productivity. The coordination of investment and production widens the scope of efficient investments via relocation of investment funds within the integrated area and inflows of investment capital and new technology from outside the region will enhance industrial expansion in those industries where economies of scale and comparative advantage are likely to exist. A regional approach in planning also has advantages for infrastructural development in such areas as transport and communication. Further, a coordinated approach by regional partners enhances bargaining power vis-a-vis major trading partner and can improve terms of trade and market access.

In contrast to the high expectations for economic integration, the experiences of integration among developing countries have been a history of conflicts and failures. The elimination of trade restriction within most newly integrated areas have increased the volume of intratrade. However, this initial positive response has subsequently waned due to lack of cooperation or regional conflict. Some of these integrative schemes such as the East African Community have broken up or become inoperative while others are in danger of doing so. The belief that the theory of customs union could be applied to the developing countries has helped lead to false expectations regarding gains to be derived. Most of the developing countries have a low industrial base. They are producers of agricultural products and raw materials and export mainly to the developed market economies. Industrial production is based on the manufacture of these primary products and alternatives for productive factors are limited. Furthermore, since much of the industrial production has been directed toward import substitution in consumer markets, developing countries are unprepared and unwilling to open their highly protected domestic markets.

Another important reason for the failure of economic cooperation among developing countries has been the distributive issue. Due to the differences in levels of development, the economic gains would likely accrue to the more developed and efficient. This polarization effect and the fact that the more developed members are able to attract new industries and investment from within and without tends to widen the gap in economic development between the members. Since compensatory mechanisms are conceptually difficult to negotiate and implement, trade liberalization may not be in the interest of the less efficient producers. Countries with higher production cost structures are justifiably apprehensive of the effects of trade liberalization and its impact on domestic output and employment. Furthermore, higher tariff members are reluctant to cut tariffs because of perceived inadequate reciprocity from the lower tariff members. Members expectedly take a short term view of the perceived gains and losses and national interests are placed above regional interests. To forego short term national interests in favor of long term common regional goals requires a high level of political statesmanship, and the lack of political will has often been blamed as one of the reasons for the failure of economic integration schemes among developing countries.

Another reason for the unsuccessful attempts at economic cooperation has been the failure to anticipate the enormous costs of negotiating, renegotiating, monitoring and enforcing agreements among the governments of member countries. The time required for expected gains to be realized is also a factor. Even among the industrialized countries of the European Community, the time absorbing and lengthy negotiations clearly show how difficult--it is especially when the benefits and costs are perceived as not being equally shared.

Other reasons which contributed to the poor record of economic cooperation among developing countries have been the frequent and repeated fundamental socio-economic and political changes within the integrated area. The instability of governments often compound a difficult situation. Also, the differences among economic and political systems are too great, the tensions among the members may ultimately lead to the demise of efforts at cooperation.

ASEAN

The Association of Southeast Asian Nations (ASEAN) was founded in 1967 when the foreign ministers of Indonesia, Malaysia, Philippines, Singapore and Thailand expressed their desire for regional cooperation to accelerate the economic growth, social progress and cultural development in the region and signed the Bangkok Declaration. Brunei, the small but oil-rich state, became the sixth member in 1984. The Bangkok Declaration was not a formal charter. It contained no grandiose plans for economic integration or supranational objectives. It did not seek to dismantle internal tariffs altogether or impose a common external tariff as would a common market.

Cooperation among member countries in the early years was more symbolic than substantive. The partners in the initial years learned to know one another through cultural and social exchanges. They laid the framework for periodic consultations and took positions on issues through consensus. ASEAN'S cooperation process in its early years was therefore open-ended and unstructured. ASEAN adopted a laissez-faire attitude towards economic cooperation. Consequently, no agreed pace of cooperation was forced upon member countries. A structure evolved around permanent committees which were organized to discuss a wide range of interests.

The pace of ASEAN economic cooperation increased with the fall of South Vietnam in April 1975. Prompted by the communist takeover of Indochina, the ASEAN heads of government met at Bali in February 1976. The meeting ended in the signing of the Declaration of ASEAN Concord which set forth guidelines for a more comprehensive program in regional economic cooperation. The member countries of ASEAN committed themselves to trade liberalization as a long term objective, to be pursued through the framework of ASEAN's preferential trading arrangements (PTA).

This framework does not have a time frame for dismantling internal trade barriers or an ultimate goal. It merely provides a mechanism whereby intra-ASEAN trade can be liberalized at a pace acceptable to all member countries. Of the instruments, the exchange of tariff preferences is the most preferred and this approach is being pursued through voluntary as well as across-the-board reductions.

In terms of numbers, the PTA preferences appear impressive, but its impact on intra-ASEAN trade is severely limited by the national exclusion list comprising sensitive products. Trade items which made use of the PTA have comprised less than 5 percent of intraregional trade. These exclusion lists have been recognized to be an obstacle to the expansion of intra-ASEAN trade through the PTA scheme. As a consequence, efforts are being taken to reduce the number of items on the lists.

Various schemes of industrial cooperation have been promoted in ASEAN. These are the ASEAN industrial projects (AIP), ASEAN industrial complementation (AIC) and ASEAN industrial joint venture scheme (AIJV). The large-scale industrial projects involve the establishment of plants to be located in member countries for the production of the region's requirements in specific industrial inputs. This arrangement is to provide for an extension of the import-substitution process and to take advantage of the economies of scale in production in the expanded regional market. The projects are to be jointly owned by the five ASEAN member countries with the host country assuming 60 percent of the equity and the others subscribing 10 percent each.

This "package deal" approach, though conceptually sound and theoretically appealing, has encountered numerous problems in its implementation. Differing national endowments and perceptions and economic philosophies have delayed implementation. The first project to get under way was Indonesia's Acheh Fertilizer Project in Sumatra. Next was the Malaysian ASEAN urea project at Bintulu, Sarawak.

While the AIP seeks to establish new large-scale, government initiated industrial projects, the AIC program attempts to promote greater complementarity among existing industries in the region through private initiative. Under the AIC scheme, member countries would propose to produce complementary products within specific industrial sectors for preferential exchange among themselves. For the first AIC package, a 50 percent across-the-board tariff cut was extended to existing automotive products on a most favored nation (MFN) basis by all member countries. The second package which included new automobile parts and components has been deferred indefinitely.

The outcome of the AIC scheme has been disappointing. The negotiating process is too time consuming and unwieldy and like the AIP, involves issues such as allocation of exclusivity rights which individual members are unwilling to accede. Any intended package requires the participation of at least four of the five member countries. Identifying a range of AIC packages agreeable to each of the five member countries with their diverse economic structures and production efficiencies is not an easy task.

The ASEAN Industrial Joint Venture (AIJV) is a new flexible framework of industrial complementation based on private sector initiatives. A minimum of two ASEAN members can proceed to establish AIJVs with an equity of at least 51 percent and qualify for a 50 percent reduction in tariffs within the project participating countries. After four years, all ASEAN countries must extent the same tariff preference to all AIJV products on a most favored nation basis. This implies that exporters of the same products from a previously non-AIJV project would also enjoy the benefits of preferences given. AIJVs appear to constitute the main mechanism for future regional industrial cooperation. The ASEAN Secretariat functions as a channel of communication among the economic and political factions. It is not directly involved in the work of the committees. It only plays a supportive role in monitoring, coordinating and assisting in cooperation activities. It also facilitates communications with third countries and organizations.

Over the years, ASEAN has adopted a unified approach to the many regional and international economic issues. One of the benefits of a unified approach is the increased bargaining position to facilitate collective action in dealings with third countries. It is in this area that ASEAN has achieved notable success.

In the 1970s, ASEAN formalized dialogue sessions with the Economic Community, Australia, Japan, Canada, New Zealand and the United States as well as agencies of the United Nations. By its collective action, ASEAN has learned to exert considerable influence and leverage in dealings with its dialogue partners. It has made demands on each of its dialogue partners in matters such as investment, market access via the Generalized System of Preferences for its manufactured exports and support for the stabilization of an export earnings fund. ASEAN's decision-making process by consensus is cumbersome and time-consuming. The process of economic cooperation among ASEAN countries is open-ended with no time frame for dismantling internal tariffs or other objectives. Due to the diversity in the level of development and differences in the openness of their economies, the consensus process has tended to restrain those members advocating for greater integration and to favor the more conservative who are wary of a faster pace of economic cooperation. The consensus mechanism does have some advantages. Distributive issues must be worked out before proposals for economic cooperation are implemented. The consensus approach also work well in other areas of cooperation. These programs of cooperation, which are development or technical in nature, are not as well publicized as the industrial cooperation. Programs of cooperation in finance and banking, food, agriculture and forestry, minerals and energy, transport and communications and tourism have usually been approved as regional interests in these projects seldom conflict with national interests.

The ASEAN Economies

ASEAN comprises a group of outward-looking middle-income economies. In 1984, the five ASEAN countries had a combined population of 280 million, a gross domestic product (GDP) of $206 billion, and annual merchandise trade of $148 billion. During the past two decades, these economies have been among the world's most dynamic and rapidly growing with real GDP growth of between 6 to 8 percent. Apart from the slower growth of the Philippines, all five members grew faster than the world's middle-income countries.

Over the past two decades since 1965, the ASEAN economies have been able to sustain high rates of economic growth during a period when the world economy has been beset by oil shocks in 1974 and 1979 and subsequent international financial disorders. The ASEAN countries have also been impressive in their resilience during the world recession of the 1980s when most developing countries suffered declines in output and per capita incomes. The strength of the ASEAN economies was due, in part, to the availability of natural resources in all ASEAN countries, except Singapore, and to the export-oriented industrialization strategy of all five countries.

The ASEAN economies have experienced significant structural changes since the 1960s. The agriculture sectors have been the slowest growing and the industrial sectors, with few exceptions, have achieved the highest growth rates. As a result of these differential sectoral growth rates, the production shares of the agriculture sectors have continuously declined. The shares of the services sector for all ASEAN economies, except for Singapore, have remained relatively constant.

Industrial development since the end of World War II has been adopted by the ASEAN economies as a principle strategy to diversify their economies from an over-reliance on primary production (in the case of Singapore, on entrepot trade) and to accelerate economic development. The process of industrialization among the ASEAN countries has generally started off with the familiar sequence of import substitution followed by export promotion. There were, however, significant differences in the industrialization experiences among the group in the duration of import substitution and policy measures adopted before switching to an export-oriented industrialization strategy.

These differences were due in part to the size of domestic markets, resource endowments, historical circumstances and general levels of development (Bautista, 1984). Singapore, with a tiny domestic market, sparse natural resources and a long tradition of entrepot trade, has become the most industrialized. At the other extreme is Indonesia, with a vast domestic market, abundant natural resources and historically strong primary trade specialization. In terms of duration, the Philippines has the longest history in industrialization having established import substitution industries in the late 1940s. The Philippines was followed a decade later by Malaysia, Singapore and Thailand and Indonesia two decades later.

Import substitution policies met with initial success within the confines of the small protected domestic market. After the initial easy phase, the continuation of the import substitution policies did not sustain the rapid growth experienced in the early years. Industrial growth was confined essentially to the growth of the domestic market with little prospect for export. Most of the industries established were not competitive internationally, due in part to the nature of policy measures instituted. The options available to these countries in order to maintain a rapid industrial growth therefore required either vigorous efforts in export promotion or a secondary round of import substitution in more capital- and skill-intensive activities. ASEAN policy makers responded by emphasizing the promotion of export oriented industrialization, and at the same time, widened the prospects for import substitution.

ASEAN's current industrialization strategy centers on export orientation and deepening of the industrial structure with import substitution of intermediate inputs. The export-oriented industries include the manufacture of labor-intensive goods--such as textiles and garments, footwear, leather products, plastic products--and electrical and electronic components assembly.

Import substitution is now being attempted in the chemicals, plastic materials, iron and steel industries and in the manufacture of component parts for automobiles. Most ASEAN countries are also pursuing resource-based industrialization and heavy industries. The underlying motivation for this seems to be two fold. One is derived from the perception of natural comparative advantages vis-a-vis foreign suppliers. The other is based on the perception that the establishment of heavy industries is critical to the balanced development of the manufacturing sector. Some projects which have been implemented or planned include petrochemicals in Singapore, Indonesia, Malaysia and Thailand; aluminium smelting in Indonesia; zinc and copper smelting in Thailand and the Philippines, respectively; chemical fertilizers in Indonesia, Malaysia and Thailand; integrated wood processing in Indonesia and Malaysia and rubber-based products in Malaysia.

The structural transformation of the mainly entrepot trading economy of the 1960s to one of manufacturing and services has been the basic factor for Singapore's success in achieving the highest per capita income in the region. The economy first shifted from entrepot trade to labor-intensive domestic manufactures such as food processing, textiles and garments manufactures and later to the more capital-intensive and higher value added industries such as petroleum refining, chemicals, machinery and transport equipment. More recently, Singapore has concentrated on developing services--especially tourism, transport and communications, financial and business services--and skill- intensive high technology industries.

ASEAN's total trade, except for the last couple of years, exhibited a rising trend and achieved an annual average growth rate of 11.4 percent. In real terms, and except for Indonesia, exports from ASEAN countries grew faster than the middle income economies. The stagnation or reduction of trade since 1984 was due to the slowdown in the international economy and import restraints. Consequently, in the 1980s, the ASEAN countries are not expected to duplicate the impressive double digit GDP growth of the two previous decades.

ASEAN's exports of agriculture raw materials have declined over the years. Fuel was the main export for Indonesia and Malaysia over the past decade, and manufactured goods have increased.

Viewed by their economic function, the import trend is clear. Consumption goods have declined over the years while investment and intermediate goods have increased.

ASEAN's most important trading partners have been Japan, the United States and Economic Community in that order. Intra-ASEAN trade has been smaller that trade with Japan but larger than with the U.S. The share of intra-ASEAN trade has grown from 12.9 percent in 1975 to a high of 20.7 percent in 1983. It has declined since. Relative to trade with other major trading countries or region. the growth of intra-ASEAN trade was the most rapid. Since 1983, the magnitude of intra-ASEAN trade has led that from all other economic cooperation among developing countries. Nevertheless, in comparison with the Economic Community (EC) and the Council of Mutual Economic Assistance (CMEA), the level of intra-ASEAN trade remains low. Within the EC and CMEA, more than half of all trade was conducted between regional partners.

Singapore dominated the intra-ASEAN trade with a share of 46.4 percent for total intraregional trade in 1985. Malaysia was second with a share of 27.3 percent. A significant feature was the decrease in Indonesia's share of total intra-ASEAN, exports and imports. A striking feature of the composition of intra-ASEAN trade was the predominance of petroleum and petroleum products in Singapore's trade with Indonesia and Malaysia as well as Thai imports from Singapore and Malaysia. Trade in petroleum and petroleum products made up 62.6 percent of all intra-ASEAN trade.

New refining capacities in Indonesia and Malaysia is expected to reduce intra-ASEAN trade in petroleum and petroleum products. If so, the potential of an increase in intraregional trade will rest on manufactures which in 1982, comprised 19.0 percent of total intra-ASEAN trade. Prior to export-oriented industrialization, ASEAN's exports consisted mostly of primary products, while imports were almost exclusively of manufactured goods. The increasing share of manufactures in the total exports of ASEAN countries during the 1970s has given rise to possibilities of increasing intra-ASEAN (as well extra-ASEAN) intraindustry trade.

The indices of intra-ASEAN intraindustry trade increased for every pair of ASEAN countries in the 1970s. This trend is indicative of the growing intraindustry specialization in the region and augers well for the potential of increasing intraregional trade in manufactures.

Total intra-ASEAN exports of foods items amounted to $1007.8 million in 1982 and this accounted for 7.3 percent of total intra-ASEAN exports. Thailand exported the most to other ASEAN countries. The major exports were rice, maize and sugar. These exports accounted for 58.7 percent of Thailand's total intra-ASEAN trade in 1982. The main commodities traded in the region in their order of importance were rice, unmilled maize, fish, sugar, animal feedstuff, fresh vegetables, cocoa, spices, preserved fruits and cereal preparations.

Agriculture in ASEAN Economic Cooperation

In terms of employment, contribution to national output and share of external trade, agriculture ranks as a major sector in Indonesia, Malaysia, Thailand and the Philippines. Regional integration and the prospect of an enlarged and assured market could induce the fuller utilization of resources for food production. The prospects for increased food security are stronger in a regional rather than a national framework through synchronizations in supply, regional stockpiling and other stabilization schemes. It is generally considered that regional cooperation is more beneficial to industry than to agriculture because of the greater benefits from economies of scale and more specialized manufacturing (FAO, 1976). However, opportunities for economies of scale do exist for certain agriculture processing industries and agro-based manufacturing such as fertilizers, pesticides, agricultural machinery, animal feeds and vaccines.

The benefits of external economies in a regional approach in agriculture could be substantial, particularly in regional coordination of agricultural research, human resource development, technical assistance and funding by third countries, infrastructural improvements in transport and communications, and marketing, food handling and storage facilities. External economies could also apply to freight and insurance negotiations with international carriers and trade promotions and efforts to gain market access--especially in major developed countries.

ASEAN is a major world producer of several primary agricultural commodities, including rubber, palm oil and cocoa. The prospects of terms of trade gains are more favorable through a coordinated regional group effort in international trade negotiations. While concerted actions to improve the terms of trade need not necessarily be confined to a regional integration framework, it provides a strong platform for initiating and coordinating moves to counter common commodity problems.

If agriculture trade is liberalized within the region, the increased competition may make agriculture more efficient and productive. A liberalized trade regime and open environment will inevitably cause considerable shifts in production which will cause social problems in resource reallocation.

Generally, the agriculture commodities produced (and protected) by the subsistence sector in one country are often produced more efficiently by larger sized farm units in the same country or member countries. Trade liberalization in agriculture may further depress the already low incomes of such smallholders. Given the high population growth and rural unemployment, this will further accelerate unemployment and rural migration. Structural differences and efficiencies will limit the free trade argument because disruptive imports, unemployment and lower incomes would induce retaliatory measures to protect the domestic economy.

There is a lack of first hand experience in agriculture cooperation, relative to cooperation in industries, in integration arrangements among less developed countries. This lack of experience causes uncertainty about the outcome of integration.

Empirical studies have shown the lack of complementarity among the ASEAN economies and hence the limited potential of intra-ASEAN trade (Chi'en, 1978). However, despite the apparent competitive structure, intraregional trade can be expanded where complementarities exist. Some of the members are self-sufficient in food while others are in deficit. The differing seasonal nature of agricultural production could further enhance intra-

ASEAN trade. Other difficulties include an inadequate and high cost transportation and communication network and a lack of market information.

Despite these difficulties, arguments of social equity and political realism for the inclusion of agriculture in ASEAN are strong. Any joint action to improve the standard of living of people should include the relatively backward agriculture sector. It would be unethical to exclude the large sections of the population dependent on agriculture from the benefits of integration. Regional integration is a demanding long term process, political as well as economically. Therefore a regional integration scheme which has the support of all sectors of the economy would stand a better chance of success.

On the appropriate mechanism to integrate the agricultural sectors, a global approach via a free market mechanism is politically and socially unacceptable. The alternative global approach through a comprehensive set of intervention mechanisms is theoretically preferable, but it raises a number of practical problems. It requires supranational decision making, regional as well as national planning and an administrative capability which is lacking in ASEAN at the present time. Economic cooperation has not advanced to a stage where member countries are willing to forgo decision making in favor of a supranational body. A selective approach has much appeal. Regional policy decisions can be initiated within a predetermined time frame to integrate a few commodities or inputs which are economically important but politically sensitive. Additional commodities or subsectors can gradually be incorporated within the framework of a longer-term global perspective for regional agriculture.

To accelerate agriculture trade within the region, a number of approaches can be attempted. Firstly, both short-term and medium-term bilateral agreements can be entered between food deficit and surplus members to guarantee access to supplies. Secondly, extraregional imports should be limited if regional supplies are available at competitive prices. Thirdly, there should be more complete market information and monitoring of food production on likely surpluses and deficits among member countries. Any shortfall in a member country could be overcome with short-term contract for supplies from food surplus partner countries. Some of these commodities (such as rice, maize and sugar), which are surplus in some, yet deficit in others, can further expand intra-ASEAN trade.

In the long run, it is expected that a gradual increase in production specialization will occur among member countries. This increased specialization will not be disruptive if it occurs in future additions to regional production and not within existing production levels. Such incremental specialization should not effect a decrease in the absolute level of output or reduction of employment in any subsector of a member country's agriculture. Integration should therefor not be a threat to existing patterns of production and levels of employment in agriculture. In the long term, a liberalization of agriculture approach will require the harmonization of agricultural policies in the region.

If the ultimate long-term goal of integrating agriculture is to free trade within the region, it would be easier if the agriculture policies of member countries did not vary so much. The greater the range of support prices, the greater would be the general consequences in terms of resource allocation, income distribution and agriculture development. And, the greater the effects, the less palatable agricultural integration will be for the disadvantaged member countries. As long as one member country in the integration framework considers the change in intervention prices or the freeing of agriculture trade a threat to its social and economic stability, it is unlikely that there will be agreement to integrate the national agriculture.

The Integration Model

A multi-sector linear programming model for economic integration of the type suggested by Mennes (1973) was used in this study to determine the effects of intraregional trade liberalization and the potential of intra-ASEAN trade. The model minimized investment outlays given fixed income growth targets over a range of reduced tariff rates among the ASEAN countries over a planning period of five years.

The model distinguishes between national and international sectors. National sectors were those sectors where products cannot be transported internationally or where production is mainly confined to the domestic economy. Restrictions on production, transportation cost, tariffs and durability of investment goods were taken into consideration.

The single-country model depicted a situation where no integration was envisaged. Whereas, the ASEAN integration model permitted internal tariffs to be progressively reduced. Each of the model specified 25 sectors in the economy. Solutions were obtained for the five single-country models and the ASEAN integration model. In the integration model, across-the-board tariffs on all intraregional trade were progressively reduced until all regional trade barriers were completely abolished and a free trade area (FTA) situation existed.

Model Results and Conclusions

Results for all member countries show that expansion of production capacities in all sectors in the FTA situation remained unchanged when compared to a preintegration situation. However, some of the imports were now obtained from member countries instead of third countries. Imports in some sectors were entirely or partially sourced from partner countries.

Extra-ASEAN imports declined when all internal tariff barriers were abolished. This declining trend was as expected. Intraregional trade increased as internal barriers were reduced. The declining trend was reflected in the model solutions for all countries except Singapore. The percentage of extra-ASEAN imports by sectors were fairly stable over the range of tariff reductions. Chemical products, transport equipment, machinery and metal products remained the dominant sectors at all levels of tariff liberalization. This result reflects ASEAN's continued reliance on these imports due to the limited expansion capacity in these sectors. Most of the regional trade was dominated by crude petroleum and natural gas. The share of regional trade in textiles, machinery and petroleum products gained significantly in the share of regional trade when tariffs were reduced from a 50 percent to a 100 percent tariff cut.

The direction and composition of trade flows within ASEAN at the FTA situation show that Indonesian exports were comprised mainly of crude petroleum and natural gas and food, beverage and tobacco manufactures. Total imports consisted mainly of textiles, leather and products thereof and petroleum and its products. Malaysia's export to her regional partners were mainly food, beverage and tobacco manufactures and machinery products. Philippines' main exports and imports were other mining and crude petroleum and natural gas, respectively. Results of the model reveal that Singapore, despite its smallness in size in gross domestic product and population, is a major regional trading partner. Singapore exports mainly machinery and petroleum and its products and imports mostly crude petroleum and natural gas. Thailand is another major regional trading member, exporting mainly agricultural products, while importing machinery and crude petroleum and natural gas.

A consequence of economic integration is the uneven distribution of costs and benefits. Previous experience with integration arrangements have revealed that distributional benefits will concentrate in those countries and regions which are more efficient and best placed to take advantage of new opportunities. One indication of this trend is reflected in the regional trade balances when tariffs were progressively reduced. It is not surprising that the trade balance of Singapore, the most developed member in the region with the highest GDP per capita, improved at the expense of other members, particularly in a free trade area situation. Indonesia and the Philippines were generally unaffected for all levels of tariff reduction while the trade balances of Malaysia and Thailand worsened. Thailand's trade position did not worsen until all tariffs were reduced while Malaysia's trade deficit was quite pronounced even at a 30 percent rate of tariff reduction.

Comparisons of the objective function values of the optimal solution for various levels of tariff reduction provide an estimate of whether trade liberalization would be beneficial in terms of reduced investment outlays while maintaining the individual income or output growth targets for all participating member countries. The total elimination of regional tariff barriers resulted in a reduction of total investment cost of 0.80 percent relative to a nonintegration situation. This result is generally consistent with several empirical studies to measure static gains from economic integration. In terms of the potential of intra-ASEAN trade, intraregional trade as a proportion of total trade increased from 12.5 percent to 21.6 percent.

The dual values of the production activities and capacities from the model solutions were used to determine the sectoral comparative advantage. Generally, the comparative advantage of each sector can be gauged by the source of extra- and intra-ASEAN exports. If no production capacity constraints were imposed on each sector to reflect the limitations of capacity expansion, a comparatively disadvantaged sector would be inferred by the import of commodities or products by that sector, either from member ASEAN countries or extra-ASEAN sources. In such a situation, production in excess of domestic requirements would be exported. The products of sectors which do not expand their production capacities and whose domestic demand exceeds original capacity, would be imported to satisfy the increase in intermediate and final demand.

Even with limitations on production capacity imposed, the implied comparative advantages of the sectors by countries could be determined from the values of the dual available in the final tableau of the optimal solutions. To achieve the income growth targets, production capacities are expanded according to comparative advantage as implied in the dual values. For the region as a whole, and given that capital was the only factor considered, the results indicate that the agricultural sectors enjoyed comparative advantage. Nonmetallic, metallic, chemical and petroleum products, being capital intensive sectors, were the most comparatively disadvantaged sectors.

Examination of the effects of trade liberalization did not exhibit any increased degree of specialization in the model solutions, even when regional tariffs were totally abolished. This result implies that the savings in total investment expenditures at various tariff reduction levels over a non-integration situation were achieved through the substitution of intraregional trade for extraregional trade and such a substitution came about as a result of a reduction of the tariff cost component. This lack of specialization was perhaps partly due to the data-imposed similarities in the structure of ASEAN economies. The beneficial effects of economic integration will be greater the more the economies of the member countries are complementary. Other reasons could be due to the sectoral production expansion constraints imposed. If the limits of sectoral production capacities were expanded, greater opportunities for specialization would occur. However, production capacities were imposed to reflect actual ability to increase capacities during the plan period and each members' desire for balanced growth.

Limitations and Areas for Further Research

Despite the limitations of the model, it provides useful insights into the potential and direction of intra-regional trade. Although the model can indicate how production and trade structures could be affected by tariff reductions, its usefulness and predictability can be further enhanced. The model assumes that capital is the only scarce factor of production and economies of scale do not exist. Inclusion of other production factors such as labor would improve the model. Incorporation of economies of scale in investment costs could be represented by a constant elasticity capacity cost function (Mennes, 1973:98). Extraregional exports were found to be underestimated because extraregional (rest of the world) demand was absent in the model unlike intraregional demand. External demand could be incorporated. The model is also not able to depict intraindustry trade. To overcome this, disaggregation of sectors by product lines could be attempted but this would greatly increase the size of the model and data requirements.

Finally, the model was based on input-output tables from the five largest ASEAN countries. A regional input-out table would be ideal.

Concluding Remarks

Since 1985, most ASEAN economies were significantly affected by the slowdown in the world economy and the sharper deceleration in growth in world trade brought about by the concerted action of most countries to curb imports. While the Philippines economy registered the only negative growth rate in 1984, Singapore which had been one of the fastest growing economies in the region, registered a negative rate of growth. Indonesia and Malaysia, the two major exporters of primary commodities experienced sharply reduced growth rates primarily because of the fall in oil and other primary commodity prices. Likewise, Thailand suffered the same fate due to the fall in the price of rice, sugar, tin and other commodities as well as to the slower growth in manufactured exports. Malaysia and Singapore in particular, were adversely affected in 1985 by the collapse in the export demand, in U.S. and other markets, for electronic components. Since the industry constitutes a substantial proportion of total nonfuel manufacturing output in both countries, the fall in demand resulted in a substantial decline in the value added by the manufacturing sector in 1985.

As a consequence of the economic slowdown, most ASEAN countries are concerned about their current account deficits and the rising debt burden and have reduced or rescheduled large capital intensive projects, reduced imports, and placed stricter controls on foreign borrowing. At the same time, most ASEAN countries are trying to cope with large fiscal deficits by reducing, through privatization, the public sectors' direct role in the economies.

There are signs that ASEAN's attitude to further economic cooperation is changing. The external economic environment characterized by a sluggish world economy and trade seems to have created the political will that has so far been lacking in this economically dynamic region.

Steps are being taken to coordinate regional investment and foster a faster pace of trade liberalization. These steps include reducing exclusion list; increasing margins of preference; adhering to a tariffs only principle; effecting a standstill and rollback on non-tariff barriers; standardizing customs nomenclature, regulations and documentation procedures; reducing the rules of origin and improving the efficiency of the regional transportation network. Steps are also being taken to widen industrial cooperation via the industrial joint venture mechanism and strengthening the institutions, initiating monetary and financial system and consolidating ASEAN's external economic relations in multilateral negotiations with dialogue partners.

The future of ASEAN economic cooperation is bright but there is still a long way to go. The ASEAN heads of government are due to meet in Manila in December 1987 for only the third time in ASEAN's twenty-year history. The world will be watching. The option for ASEAN is clear.

> In an increasingly hostile and unconducive world economic environment where opportunities are fewer and competition between the ASEAN members and between them and others will increase, the ASEAN states must compete. And compete more effectively. But in many areas and on many occasions we must join hands vis-a-vis the outside world, and to develop our own region.
>
> It would be extremely naive not to fully understand the limits ASEAN economic cooperation or the enormous difficulties that even the simple cooperative endeavour can encounter. But much can be done. And much must be done.

(ASEAN: The Way Forward. Report of the Group of Fourteen on ASEAN Economic Cooperation and Integration, July 1987.)

APPENDIX A: NUMERICAL MODEL SPECIFICATIONS

Table A.1 INDONESIA: INPUT COEFFICIENT MATRIX AT PRODUCERS' PRICE, 1975 (25 SECTORS).

Sector	1	2	3	4	5	6	7	8	9
1	.0120	.0005	.	.	.	.	.	.	.0018
2	.	.0051	.	.	.	.	.	.	.0010
3	.	.	.	.	.	.	.	.	.
4	.	.	.	.0372	.	.	.	.	.0009
5	.	.	.	.	.0729	.	.0001	.	.
6	.	.	.	.	.	.0010	.	.	.
7	.	.	.	.	.	.	.0266	.0007	.0030
8	.	.	.	.	.	.	.	.0098	.0008
9	.0005	.0010	.0010	.0006	.0011	.0073	.0015	.0033	.0100
10	.	.	.0037	.	.	.	.	.	.
11	.	.	.	.	.	.	.	.	.0001
12A	.	.	.	.	.	.	.	.	.0057
12B	.	.	.	.	.	.	.	.	.0042
13	.0004	.0015	.0007	.0004	.0023	.0072	.0016	.0025	.0029
14	.0007	.0022	.0016	.0014	.0023	.0034	.0025	.0038	.0056
15	.0207	.0055	.0300	.0578	.0184	.0097	.0152	.0249	.0015
16	.	.0001	.0039	.0033	.0035	.0010	.0002	.0029	.0102
17	.	.	.0001	.	.	.	.	.	.
18	.0002	.	.	.0048	.	.0002	.0002	.	.0002
19	.0017	.0084	.0031	.0032	.0067	.	.0034	.0051	.0018
20	.	.	.0004	.0001	.	.	.	.0001	.0003
21	.0002	.0016	.0095	.0146	.0121	.0072	.0004	.0041	.0214
22	.	.	.0015	.0002	.0005	.0001	.	.0012	.0011
23	.0042	.	.0081	.0253	.0141	.0083	.0027	.0089	.0104
24	.0304	.0123	.0610	.0961	.0280	.0236	.0150	.0382	.0330
	.0716	.0384	.1289	.2411	.1648	.0740	.0701	.1072	.1175<a>
	.9284	.9616	.8711	.7589	.8352	.9260	.9299	.8928	.8825<b>

<a> Total intermediate inputs
<b> Total value added

Table A.1 (continued)

Sector	10	11	12A	12B	13	14	15	16	17
1	.	.	.7607	.	.	.0015	.	.	.
2	.	.	.	.0401	.	.	.	.	.
3	.	.	.	.	.	.	.	.	.4394
4	.	.	.	.0195	.	.	.	.	.
5	.	.	.0429	.	.0001	.	.	.	.
6	.	.	.	.	.0542	.0041	.	.	.
7	.	.	.	.0682	.	.	.0009	.	.
8	.	.	.	.0847	.0006	.1053	.0072	.	.
9	.	.0010	.0001	.1077	.0010	.	.0030	.	.0011
10	.0021	.	.	.	.	.	.0044	.5707	.0032
11	.	.0004	.	.0016	.0001	.0004	.0093	.	.0003
12A	.	.	.0197	.0112	.	.	.0014	.	.
12B	.	.	.	.0530	.0137	.0024	.0658	.	.
13	.0001	.0015	.0004	.0024	.3963	.0067	.0026	.0001	.0195
14	.0003	.0079	.0003	.0081	.0298	.1026	.0283	.0050	.0017
15	.	.0013	.	.0033	.0434	.0961	.2492	.0155	.0278
16	.0053	.0143	.0010	.0033	.0045	.0075	.0121	.0687	.0047
17	.	.	.	.	.0030	.0012	.0001	.	.1610
18	.	.	.	.0008	.0002	.0013	.0124	.0001	.0003
19	.0003	.0097	.0002	.0045	.0011	.0161	.0065	.0119	.0039
20	.0043	.0328	.0018	.0025	.0030	.0037	.0015	.0045	.0023
21	.0025	.0068	.0001	.0020	.0003	.0019	.0027	.0025	.0083
22	.0047	.0244	.0015	.0106	.0254	.0157	.0172	.0131	.0021
23	.0016	.0037	.0011	.0028	.0038	.0043	.0038	.0062	.0076
24	.0101	.0283	.0294	.1165	.0667	.1817	.1123	.0521	.0618
	.0316	.1703	.8170	.6388	.6844	.6010	.5428	.6087	.7570<a>
	.9684	.8297	.1930	.3612	.3156	.3990	.4572	.3913	.2430<b>

<a> Total intermediate inputs
<b> Total value added

Table A.1 (continued)

Sector	18	19	20	21	22	23	24	
1	.0173	.	.	.	.	.0023	.0001	
2	.	.	.	.	.	.	.0011	
3	.	.	.	.	.	.	.	
4	.	.	.	.	.	.	.0001	
5	.	.	.	.	.	.	.0011	
6	.	.	.	.	.	.	.	
7	.0001	.	.	.	.	.	.0062	
8	.	.	.	.	.	.	.0003	
9	.0284	.0009	.0003	.0009	.	.0240	.0086	
10	.	.	.	.	.	.	.	
11	.0933	.1306	.0010	.0002	.0042	.0397	.0001	
12A	.0010	.	.	.	.	.	.0091	
12B	.0037	.	.0003	.	.	.	.0230	
13	.0062	.0005	.0019	.0011	.0006	.0006	.0046	
14	.0242	.0177	.0121	.0192	.0040	.0574	.0085	
15	.0240	.0107	.0378	.0038	.0103	.0080	.0058	
16	.0124	.0044	.0042	.0076	.2213	.0076	.0233	
17	.	.0016	.0078	.0497	.	.	.0001	
18	.0240	.0008	.0019	.0006	.0001	.0726	.0004	
19	.0014	.2973	.0666	.0325	.0023	.1237	.0015	
20	.0023	.0223	.2966	.0302	.0388	.0428	.0028	
21	.0015	.0014	.0019	.2598	.0088	.	.0272	
22	.0314	.0162	.0067	.0053	.0340	.0007	.0039	
23	.0112	.0025	.0030	.0016	.0483	.0022	.0160	
24	.1560	.1339	.1201	.1007	.1017	.2113	.0977	
	.7614	.4643	.7106	.6762	.4915	.6354	.2477<a>	
	.2386	.5357	.2894	.3238	.5085	.3646	.7523<b>	.6317<c>

<a> Total intermediate inputs
<b> Total value added
<c> Value added for all sectors

Table A.2 MALAYSIA: INPUT COEFFICIENT MATRIX AT PRODUCERS' PRICE, 1975 (25 SECTORS).

Sector	1	2	3	4	5	6	7	8	9
1	.0049	.	.	.	.	.	.0008	.0044	.0031
2	.	.0373	.	.	.	.	.	.	.
3	.	.	.0068	.	.	.	.	.	.
4	.	.	.	.0106	.	.	.	.	.
5	.	.	.	.	.0110	.	.	.	.
6	.	.	.	.	.	.0056	.	.	.
7	.	.	.	.	.	.	.0110	.	.0040
8	.	.	.	.	.	.	.	.0384	.
9	.0003	.	.	.	.	.	.0004	.0006	.0061
10	.	.	.	.	.	.	.	.	.
11	.	.	.	.	.	.	.	.	.
12A	.	.	.	.	.	.	.	.	.0271
12B	.	.	.	.	.	.	.	.	.1237
13	.0015	.0001	.0004	.	.0010	.0048	.0030	.0016	.0007
14	.0014	.0009	.0019	.	.0049	.0056	.0075	.0052	.0079
15	.1055	.1127	.0665	.0915	.0546	.0335	.0604	.1102	.0062
16	.0118	.0067	.0024	.0980	.0087	.0016	.0104	.0025	.0433
17	.	.	.0001	.	.	.0080	.	.0001	.0001
18	.0012	.	.0017	.	.0003	.	.0018	.0041	.0017
19	.0042	.0014	.0081	.0036	.0043	.0032	.0041	.0027	.0045
20	.0037	.0012	.0021	.0014	.0012	.0024	.0017	.0002	.0086
21	.0010	.0009	.0043	.0009	.0011	.0016	.0015	.0007	.0017
22	.	.	.0024	.	.	.	.0002	.	.0015
23	.0353	.0014	.0063	.0093	.	.	.0017	.0008	.0037
24	.0774	.1535	.0311	.0812	.0411	.0638	.0436	.0322	.0292
	.2484	.3161	.1292	.2964	.1283	.1228	.1483	.2037	.3038<a>
	.7516	.6839	.8708	.7036	.8717	.8772	.8517	.7963	.6962<b>

<a> Total intermediate inputs
<b> Total value added

Table A.2 (continued)

Sector	10	11	12A	12B	13	14	15	16	17
1	.	.	.6976	.0028	.	.0001	.	.	.
2	.	.	.	.0051	.	.	.	.	.
3	.	.	.	.	.	.	.	.	.4799
4	.	.	.	.0099	.	.	.0003	.	.
5	.	.	.	.1955	.	.	.0004	.	.
6	.	.	.	.0004	.0738	.0386	.	.	.
7	.	.	.	.0383	.	.	.0006	.	.
8	.	.	.	.0076	.	.	.0014	.	.
9	.	.0011	.	.1144	.0016	.0602	.0028	.	.0003
10	.	.	.	.	.	.	.	.7112	.
11	.	.	.	.0002	.0002	.0004	.0365	.0002	.0001
12A	.	.	.0028	.0120	.	.	.	.	.
12B	.	.	.0009	.1319	.0080	.0042	.1864	.0016	.
13	.	.	.0035	.0011	.3923	.2074	.0099	.0007	.0101
14	.	.0037	.0002	.0082	.0269	.0663	.0435	.0019	.0048
15	.	.0070	.	.0084	.0735	.0722	.2682	.0040	.0486
16	.	.0581	.0006	.0057	.0097	.0151	.0185	.0338	.0044
17	.	.	.	.	.0024	.0040	.0005	.	.0287
18	.	.	.	.0021	.	.0028	.0093	.	.
19	.	.0030	.0003	.0040	.0025	.0108	.0018	.0031	.0010
20	.	.0076	.0005	.0022	.0036	.0091	.0016	.0048	.0024
21	.	.0034	.0003	.0013	.0030	.0035	.0034	.0008	.0009
22	.	.0001	.0060	.0033	.0142	.0115	.0149	.0019	.0044
23	.	.0036	.0058	.0014	.0042	.0032	.0077	.0010	.0030
24	.	.0584	.0827	.0923	.0725	.0602	.1008	.0157	.0740
	.	.1472	.8029	.6662	.6856	.4997	.7081	.7807	.6626<a>
	.	.8528	.1971	.3338	.3144	.5003	.2919	.2193	.3374<b>

<a> Total intermediate inputs
<b> Total value added

Table A.2 (continued)

Sector	18	19	20	21	22	23	24	
1	.0003	.	.	.	.	.	.	
2	.	.	.	.	.	.	.	
3	.	.	.	.	.	.	.	
4	.	.	.	.	.	.	.	
5	.	.	.	.	.	.	.0001	
6	.	.	.	.	.	.	.	
7	.	.	.	.	.	.	.0032	
8	.	.	.	.	.	.0002	.0003	
9	.0050	.0048	.0002	.	.	.0039	.0038	
10	.	.	.	.	.	.	.	
11	.0775	.3936	.	.0001	.0021	.0169	.0111	
12A	.0006	.	.	.	.	.	.0031	
12B	.	.	.	.	.	.	.0187	
13	.0130	.0001	.0063	.0183	.0014	.0010	.0073	
14	.0296	.0032	.0338	.0135	.0020	.1336	.0224	
15	.0353	.0045	.0458	.0162	.0221	.0195	.0042	
16	.1810	.0187	.0167	.0139	.3793	.0044	.0322	
17	.0001	.0035	.0114	.1002	.0002	.0003	.0044	
18	.0309	.0005	.0070	.0022	.0009	.2300	.0015	
19	.0197	.1778	.0877	.1440	.0094	.1815	.0021	
20	.0186	.0059	.3350	.0570	.0330	.0108	.0036	
21	.0049	.0016	.0046	.2776	.0009	.0015	.0108	
22	.0322	.0151	.0105	.0065	.0393	.0012	.0068	
23	.0096	.0020	.0009	.0020	.0029	.0002	.0059	
24	.0991	.0395	.0839	.0702	.0597	.1184	.1371	
	.5592	.6709	.6477	.7144	.5532	.7384	.2340<a>	
	.4408	.3291	.3523	.2856	.4488	.2616	.7660<b>	.5544<c>

<a> Total intermediate inputs
<b> Total value added
<c> Value added for all sectors

Table A.3 PHILIPPINES: INPUT COEFFICIENT MATRIX AT PRODUCERS' PRICE, 1975 (25 SECTORS).

Sector	1	2	3	4	5	6	7	8	9
1	.0279	.	.	.	.	.	.	.	.
2	.	.0814	.	.	.	.	.	.	.
3	.	.	.0154	.	.	.	.	.	.
4	.	.	.	.0301	.	.	.	.	.
5	.	.	.	.	.0598	.	.	.	.0009
6	.	.	.	.	.	.0083	.	.	.
7	.	.	.	.	.	.	.0414	.0163	.0086
8	.	.	.	.	.	.	.0022	.0141	.
9	.	.	.0021	.	.0006	.	.	.	.0360
10	.	.	.	.	.	.	.	.	.
11	.	.	.	.	.	.	.	.0003	
12A	.	.	.	.	.	.	.	.	.0051
12B	.	.	.	.	.	.	.	.	.0641
13	.0014	.0014	.0034	.0004	.0004	.0004	.0022	.0015	.0012
14	.0057	.	.0051	.0006	.0004	.0001	.0046	.0008	.0006
15	.0519	.0473	.0262	.0986	.0152	.0736	.0489	.0519	.0075
16	.0022	.0009	.0081	.0111	.0016	.0057	.0025	.0039	.0322
17	.	.	.	.	.	.	.	.	.0008
18	.	.	.	.	.	.	.	.	.0006
19	.0005	.0006	.0994	.0010	.0012	.0011	.0009	.0011	.0030
20	.0019	.	.0053	.0056	.0006	.0058	.0029	.0047	.0034
21	.	.	.	.	.	.	.	.	.
22	.	.	.	.	.	.0019	.	.0009	.0005
23	.0022	.0022	.0007	.0022	.0025	.0005	.0023	.0024	.0022
24	.0672	.0295	.0463	.0812	.0257	.0277	.0424	.0428	.0512
	.1666	.1642	.2135	.2405	.1119	.1433	.1610	.1496	.2202<a>
	.8334	.8358	.7865	.7495	.8881	.8567	.8390	.8504	.7798<b>

<a> Total intermediate inputs
<b> Total value added

Table A.3 (continued)

Sector	10	11	12A	12B	13	14	15	16	17
1	.	.	.6741	.0213	.	.	.	.	.
2	.	.	.	.0019	.	.	.	.	.
3	.	.	.	.	.	.	.	.	.0295
4	.	.	.	.0979	.	.	.	.	.
5	.	.	.	.0449	.0007	.0001	.	.	.
6	.	.	.	.	.0426	.0005	.	.	.
7	.	.	.	.0862	.	.	.	.	.
8	.	.	.	.0216	.	.	.	.	.
9	.0031	.0029	.	.1428	.0001	.1689	.0010	.	.
10	.	.	.	.	.	.0009	.0459	.5910	.
11	.	.0006	.	.0013	.0001	.0023	.0073	.0105	.0014
12A	.	.	.	.0006	.	.	.	.	.
12B	.	.	.	.0999	.0118	.0071	.0675	.	.0026
13	.0005	.0004	.0003	.0015	.3468	.0120	.0003	.	.0917
14	.0010	.0092	.0002	.0140	.0127	.1156	.0211	.0009	.0252
15	.0016	.0535	.	.0054	.0551	.0618	.2154	.0080	.1661
16	.1180	.0588	.0092	.0147	.0247	.0355	.0309	.0180	.0209
17	.0005	.0058	.0003	.0006	.0020	.0017	.0017	.0001	.1257
18	.	.0010	.0003	.0029	.	.0011	.0098	.	.0003
19	.0016	.0193	.0006	.0069	.0036	.0258	.0163	.0031	.0024
20	.0068	.0065	.0011	.0013	.0018	.0028	.0022	.0001	.0006
21	.0005	.0017	.	.0001	.0002	.0002	.0002	.0001	.0004
22	.0083	.0149	.0003	.0020	.0039	.0071	.0051	.0045	.0046
23	.	.0002	.0001	.0012	.0006	.0012	.0010	.0005	.0009
24	.0982	.0824	.1434	.1297	.1443	.1561	.1900	.0978	.1352
	.2453	.2641	.8302	.7005	.7221	.6273	.6843	.8852	.6944<a>
	.7547	.7359	.1698	.2995	.2779	.3727	.3157	.1148	.3056<b>

<a> Total intermediate inputs
<b> Total value added

Table A.3 (continued)

Sector	18	19	20	21	22	23	24	
1	.	.	.	.	.	.	.	
2	.	.	.	.	.	.	.	
3	.	.	.	.	.	.	.	
4	.	.	.	.	.	.	.	
5	.	.0001	.	.	.	.	.0001	
6	.	.	.	.	.	.	.	
7	.	.	.0002	.	.	.	.0026	
8	.	.	.0001	.	.	.	.	
9	.	.	.	.	.0006	.0108	.0064	
10	.0191	.0001	.	.0001	.	.	.	
11	.1433	.0405	.0649	.0001	.	.0406	.0001	
12A	.	.	.	.	.	.	.0044	
12B	.	.	.	.	.	.	.0189	
13	.0030	.0022	.0027	.0003	.0002	.0038	.0029	
14	.0304	.0092	.0256	.0260	.0121	.1324	.0180	
15	.0336	.0123	.0281	.0093	.0172	.0278	.0065	
16	.1811	.0390	.0210	.0057	.3898	.0130	.0237	
17	.0007	.0006	.0059	.0170	.0084	.0006	.0035	
18	.0483	.0004	.0062	.0037	.0025	.0957	.0016	
19	.0074	.3742	.1742	.0422	.0240	.1514	.0021	
20	.0022	.0015	.1460	.0058	.0110	.0094	.0017	
21	.0002	.0001	.0005	.3264	.0002	.0046	.0138	
22	.0135	.0042	.0069	.0018	.0417	.0026	.0104	
23	.0013	.0010	.0008	.0006	.0008	.0039	.0043	
24	.1833	.1758	.1951	.2309	.1798	.1682	.1510	
	.6887	.7097	.7065	.7479	.7451	.6990	.2781<a>	
	.3113	.2903	.2935	.2521	.2549	.3010	.7219<b>	.5362<c>

<a> Total intermediate inputs
<b> Total value added
<c> Value added for all sectors

Table A.4 SINGAPORE: INPUT COEFFICIENT MATRIX AT PRODUCERS' PRICE, 1975 (25 SECTORS).

Sector	1	2	3	4	5	6	7	8	9
1	.	.	.	.	.	.	.	.	.
2	.	.	.	.	.	.	.	.	.
3	.	.	.	.	.	.	.	.	.
4	.	.	.	.	.	.	.	.	.
5	.	.	.0012	.	.0012	.3165	.0016	.0013	.0114
6	.	.	.	.	.	.1222	.	.	.
7	.	.	.	.	.	.0028	.0012	.	.0079
8	.	.	.0046	.	.0013	.0016	.0019	.0012	.0016
9	.	.	.0185	.	.0612	.0206	.0355	.0524	.0162
10	.	.	.	.	.	.	.	.	.
11	.	.	.0023	.	.0026	.0005	.0023	.0025	.
12A	.	.	.	.	.	.		.0002	.0014
12B	.	.	.0729	.	.1252	.0357	.1050	.1116	.2856
13	.	.	.0032	.	.0029	.0007	.0026	.0028	.0045
14	.	.	.0116	.	.1420	.0029	.0129	.0138	.0121
15	.	.	.3333	.	.2036	.0104	.2657	.2546	.0379
16	.	.	.0023	.	.0027	.0007	.0025	.0027	.0150
17	.	.	.0081	.	.0102	.0021	.0094	.0099	.0111
18	.	.	.	.	.	.	.	.	.
19	.	.	.0116	.	.0164	.0034	.0150	.0159	.0150
20	.	.	.0023	.	.0027	.0005	.0025	.0027	.0011
21	.	.	.	.	.	.	.0003	.0002	.1315
22	.	.	.	.	.0014	.0003	.0013	.0014	.0011
23	.	.	.	.	.0001	.	.	.	.0001
24	.	.	.1088	.	.1107	.1236	.1116	.1152	.1083
	.	.	.5751	.	.5563	.6943	.5716	.5879	.6622<a>
	.	.	.4249	.	.4437	.3557	.4284	.4121	.3378<b>

<a> Total intermediate inputs
<b> Total value added

Table A.4 (continued)

Sector	10	11	12A	12B	13	14	15	16	17
1	.	.	.	.	.	.	.	.	.
2	.	.	.	.	.	.	.	.	.
3	.	.	.	.	.	.	.	.	.0010
4	.	.	.	.	.	.	.	.	.
5	.	.	.	.0113	.	.	.0033	.	.
6	.	.	.	.	.0240	.0014	.	.	.
7	.	.	.	.4653	.	.	.	.	.
8	.	.	.	.0344	.	.	.	.	.
9	.	.0001	.0629	.1247	.0007	.0234	.0004	.	.
10	.	.	.	.	.	.	.	.8500	.
11	.	.	.	.	.	.0002	.0020	.	.
12A	.	.	.1940	.0042	.	.	.	.	.
12B	.	.	.1009	.2335	.	.0091	.0234		.
13	.	.0007	.0082	.0024	.2536	.0032	.0011	.0002	.0001
14	.	.0085	.0102	.0422	.1144	.4424	.1432	.0037	.0032
15	.	.0199	.0225	.0314	.0591	.1453	.4636	.0033	.0001
16	.	.0477	.0073	.0047	.0347	.0047	.0052	.0057	.0001
17	.	.0044	.0218	.0029	.0081	.1125	.0208	.0019	.3912
18	.	.0824	.	.0002	.0028	.0030	.0025	.0004	.
19	.	.0046	.0260	.0362	.0077	.0751	.0235	.0087	.0002
20	.	.0044	.0061	.0115	.0054	.0095	.0051	.0013	.0001
21	.	.0008	.	.0018	.0007	.0007	.0019	.	.
22	.	.0080	.0005	.0016	.0011	.0004	.0012	.0006	.
23	.	.	.0009	.	.	.	.	.	.
24	.	.3715	.1682	.1333	.1120	.1607	.1340	.0085	.0694
	.	.4759	.6559	.7195	.6215	.7776	.8090	.8844	.8344<a>
	.	.5241	.3441	.2805	.3785	.2224	.1910	.1656	.3672<b>

<a> Total intermediate inputs
<b> Total value added

Table A.4 (continued)

Sector	18	19	20	21	22	23	24	
1	.	.	.	.	.	.	.	
2	.	.	.	.	.	.	.	
3	.0010	.	.	.	.	.	.	
4	.	.	.	.	.	.	.	
5	.	.	.	.	.	.	.0005	
6	.	.	.	.	.	.	.	
7	.	.	.	.	.	.	.0024	
8	.	.	.	.	.	.	.0020	
9	.	.	.	.	.	.	.0174	
10	.	.	.	.	.	.	.	
11	.0996	.0134	.	.	.	.0002	.	
12A	.	.	.	.	.	.	.0004	
12B	.	.	.	.	.	.	.0408	
13	.0009	.0005	.0003	.0002	.0056	.0002	.0074	
14	.0092	.0075	.0147	.0007	.1211	.0729	.0413	
15	.0230	.0107	.0040	.0070	.0247	.0063	.0147	
16	.0346	.0121	.0009	.0013	.2863	.0005	.0574	
17	.0083	.0007	.0067	.0129	.0287	.0049	.0143	
18	.3330	.	.0143	.0102	.	.1144	.0051	
19	.0117	.4539	.0747	.3774	.0020	.1411	.0309	
20	.0041	.0210	.4505	.0115	.0412	.1860	.0185	
21	.0016	.0002	.0232	.0383	.	.0251	.0338	
22	.0026	.0005	.0004	.0003	.0195	.	.0025	
23	.	.	.	.	.0012	.	.0011	
24	.1086	.1208	.0894	.0959	.0879	.1030	.1286	
	.6373	.6855	.6971	.5625	.6185	.6739	.4212<a>	
	.3627	.3145	.3209	.4375	.3815	.3261	.5788<b>	.3729<c>

<a> Total intermediate inputs
<b> Total value added
<c> Value added for all sectors

Table A.5 THAILAND: INPUT COEFFICIENT MATRIX AT PRODUCERS' PRICE, 1975 (25 SECTORS).

Sector	1	2	3	4	5	6	7	8	9
1	.0323	.	.	.	.	.	.0008	.0024	.0127
2	.	.0146	.	.	.	.	.	.	.
3	.	.	.	.	.	.	.	.	.
4	.	.	.	.0541	.	.	.	.	.
5	.	.	.	.	.0105	.	.	.	.
6	.	.	.	.	.	.0386	.	.	.
7	.	.	.	.	.	.	.0347	.	.0040
8	.	.	.	.	.	.	.	.3244	.
9	.0004	.	.	.	.	.0006	.0005	.0012	.0350
10	.	.	.	.	.	.	.	.	.
11	.	.	.	.	.	.	.	.	.0001
12A	.	.	.	.	.	.		.	.0503
12B	.	.	.0002	.	.	.	.	.	.1263
13	.0002	.	.0003	.	.0008	.0203	.0032	.0007	.0004
14	.0008	.0007	.0012	.	.0042	.0043	.0057	.0047	.0044
15	.0253	.0090	.0256	.0453	.0226	.0421	.0288	.0363	.0038
16	.0105	.0053	.0034	.0131	.0064	.0030	.0071	.0078	.0294
17	.	.	.0001	.	.	.0001	.	.0001	.0001
18	.0007	.	.0023	.	.0002	.	.	.0017	.0013
19	.0047	.0011	.0065	.0038	.0047	.0022	.0039	.0039	.0049
20	.0055	.0016	.0005	.0020	.0017	.0038	.0023	.0015	.0018
21	.0013	.0010	.0007	.0011	.0014	.0006	.0018	.0013	.0020
22	.	.	.	.	.	.0032	.0002	.0013	.0016
23	.0009	.0016	.0016	.0005	.	.0005	.0021	.0023	.0045
24	.0585	.0945	.0318	.0721	.0363	.0537	.0703	.0882	.0668
	.1431	.1298	.0757	.1947	.0897	.1851	.1632	.4812	.3498<a>
	.8569	.8702	.9243	.8053	.9103	.8149	.8368	.5188	.6501<b>

<a> Total intermediate inputs
<b> Total value added

Table A.5 (continued)

Sector	10	11	12A	12B	13	14	15	16	17
1	.	.	.7297	.	.	.0032	.	.	.
2	.	.	.	.0596	.	.	.	.	.
3	.	.	.	.	.	.	.	.	.2688
4	.	.	.	.0736	.	.	.0020	.	.
5	.	.	.	.0023	.	.	.	.	.
6	.	.	.	.0005	.0661	.0001	.	.	.0001
7	.	.	.	.0356	.	.0001	.	.	.
8	.	.	.	.0259	.	.0003	.0040	.	.
9	.	.0040	.	.1676	.0016	.1123	.0034	.	.0001
10	.	.	.	.0008	.	.	.	.6432	.
11	.	.	.	.	.0001	.0027	.0404	.0017	.0003
12A	.	.	.0030	.0357	.	.	.	.	.
12B	.	.	.0010	.0223	.0051	.0078	.0156	.0010	.
13	.	.0006	.0076	.0067	.3783	.0145	.0035	.0007	.0596
14	.	.0017	.0002	.0065	.0057	.1379	.0377	.0016	.0045
15	.	.0061	.	.0093	.0300	.0519	.2426	.0085	.0501
16	.	.0466	.0013	.0047	.0144	.0119	.0196	.0334	.0201
17	.	.	.	.	.0019	.0058	.0013	.	.0766
18	.	.0004	.	.0039	.	.0026	.0123	.	.
19	.	.0054	.0003	.0050	.0015	.0242	.0030	.0032	.0027
20	.	.0136	.0013	.0045	.0047	.0075	.0030	.0024	.0035
21	.	.0183	.0006	.0010	.0023	.0060	.0056	.0043	.0030
22	.	.0011	.0057	.0088	.0154	.0153	.0247	.0206	.0071
23	.	.0087	.0076	.0022	.0047	.0073	.0129	.0029	.0044
24	.	.0632	.0452	.1108	.0872	.1211	.1615	.0292	.0982
	.	.1731	.8046	.6181	.6673	.5598	.6347	.7550	.6214<a>
	.	.8269	.1954	.3819	.3327	.4402	.3653	.2450	.3786<b>

<a> Total intermediate inputs
<b> Total value added

Table A.5 (continued)

Sector	18	19	20	21	22	23	24	
1	.0006	.	.	.	.	.	.	
2	.	.	.	.	.	.	.	
3	.	.	.	.	.	.	.	
4	.	.	.	.	.	.	.	
5	.	.	.	.	.	.	.0002	
6	.	.	.	.	.	.	.	
7	.	.	.	.	.	.	.0034	
8	.	.	.	.	.	.0002	.0002	
9	.0055	.0004	.	.	.	.	.0054	
10	.	.	.	.	.	.0063	.	
11	.0997	.1557	.	.0001	.0032	.0470	.0401	
12A	.0004	.	.	.	.	.	.0060	
12B	.	.	.	.	.	.	.0310	
13	.0114	.0007	.0043	.0065	.0014	.0007	.0109	
14	.0210	.0065	.0222	.0169	.0018	.0675	.0182	
15	.0447	.0163	.0100	.0111	.0213	.1485	.0053	
16	.1010	.0153	.0140	.0131	.2997	.0787	.0378	
17	.0002	.0009	.0074	.1032	.0002	.0003	.0013	
18	.0453	.0005	.0126	.0067	.0008	.0867	.0016	
19	.0195	.3633	.1182	.0623	.0020	.1452	.0032	
20	.0275	.0119	.2446	.1000	.0613	.0368	.0048	
21	.0077	.0026	.0043	.1922	.0013	.0054	.0153	
22	.0252	.0252	.0118	.0091	.0525	.0040	.0070	
23	.0121	.0034	.0054	.0027	.0042	.0003	.0103	
24	.1729	.0774	.1683	.1224	.1158	.1494	.1267	
	.6028	.7019	.6756	.7298	.5719	.6272	.2643<a>	
	.3972	.2981	.3244	.2702	.4281	.3624	.7357<b>	.5685<c>

<a> Total intermediate inputs
<b> Total value added
<c> Value added for all sectors

Table A.6 ASEAN: RHS OF BALANCE EQUATIONS (in million US$)

Sector	ASEAN	Indonesia	Malaysia	Philippines	Singapore	Thailand
1	- 2177.3	- 1583.9	72.8	134.7	----	- 800.9
2	- 1167.5	- 749.0	1.5	- 45.1	----	- 374.9
3	- 666.8	99.8	- 52.2	- 10.6	0.3	- 704.1
4	- 343.4	- 39.6	1.4	67.1	----	- 372.4
5	- 183.7	- 666.5	151.1	370.5	24.9	- 64.0
6	373.2	99.3	157.4	- 5.4	46.5	75.5
7	- 5977.1	- 3697.3	- 204.8	- 1006.3	1119.9	- 2199.2
8	- 540.8	- 36.7	- 160.6	- 69.1	77.4	- 352.8
9	- 6682.9	- 1766.4	- 486.5	- 2313.3	78.7	- 2208.1
10	- 7196.5	-13928.8	- 2349.3	2250.1	4946.0	1885.5
11	- 925.7	- 481.3	- 304.0	- 1381.4	47.4	543.6
12A	- 9484.8	- 5286.2	- 460.1	- 1877.7	- 64.6	- 1806.5
12B	-18190.5	- 4617.5	- 3338.5	- 6493.1	- 1259.9	- 2543.6
13	- 6719.1	- 1291.4	- 337.9	- 1748.8	- 1345.2	- 2023.0
14	- 2705.0	- 483.9	- 671.3	- 912.6	- 487.7	- 233.8
15	2235.5	586.8	404.8	235.1	352.2	596.7
16	- 7452.3	- 349.2	- 175.0	- 1808.6	- 5123.7	- 879.0
17	- 2072.7	- 739.5	- 1341.2	- 55.6	146.6	- 98.2
18	- 333.2	132.7	163.2	- 208.0	- 1.2	- 436.4
19	2773.1	1315.7	- 885.1	614.9	1030.7	663.2
20	- 3038.4	1132.7	- 1054.1	- 3.4	- 2427.5	154.1
21	- 3705.4	- 1828.5	- 25.8	1094.3	- 409.1	- 384.0
22	- 3188.0	- 277.8	- 2191.5	- 242.9	- 374.4	- 204.4
23	-25732.2	-12745.1	- 1936.7	- 4906.9	- 1192.5	- 4976.5
24	-69600.2	-23311.2	-10253.9	-16135.0	- 5740.6	-14743.0

Note: A negative value indicates that total output exceeds intermediate demand.

Table A.7 RHS OF TECHNICAL RELATIONS

Sector	Indonesia	Malaysia	Philippines	Singapore	Thailand
1	727.6	41.3	162.0	--	304.9
2	122.1	2.5	7.9	--	67.6
3	47.8	91.9	2.2	--	51.7
4	9.7	5.1	90.4	--	81.7
5	122.2	83.9	103.7	1.9	9.2
6	5.9	0.1	15.9	0.5	22.4
7	526.3	48.8	226.1	1.9	297.7
8	96.4	24.4	30.3	2.8	81.0
9	882.6	294.0	1111.7	138.5	831.1
10	3869.9	--	1.7	--	--
11	306.9	160.6	491.5	3.5	218.1
12A	1485.2	147.7	488.9	25.1	573.7
12B	1492.0	1113.4	2110.4	612.3	959.0
13	659.1	333.5	760.7	494.6	990.1
14	613.6	403.1	700.0	729.3	353.8
15	295.9	107.7	343.1	241.5	312.3
16	497.0	238.1	945.3	1493.7	737.9
17	293.2	382.6	68.6	183.6	100.6
18	241.1	100.1	215.5	112.5	268.1
19	254.5	481.5	319.6	280.3	234.8
20	247.0	468.0	333.7	1379.1	180.7
21	1009.5	63.5	563.3	251.8	525.9
22	216.9	93.4	175.6	108.3	182.6
23	3481.0	517.9	1304.7	308.9	1638.9
24	8389.4	2514.4	6574.0	2341.8	5343.9

Note: Values denote capacity put out of question.
$\sigma^{h} = 0.8811$ ($h = 1,\ldots,8$)
$\sigma^{h'} = 0.7433$ ($h' = 9,\ldots,24$)

Table A.8 INCOME TARGET EQUATIONS: TOTAL VALUE-ADDED COEFFICIENT

Sector	Indonesia	Malaysia	Philippines	Singapore	Thailand
1	.9284	.7516	.8334	.	.8569
2	.9616	.6339	.8358	.	.8702
3	.8711	.8708	.7865	.4249	.9243
4	.7589	.7036	.7595	.	.8053
5	.8352	.8717	.8881	.4437	.9103
6	.9260	.8772	.8567	.3557	.8149
7	.9299	.8517	.8390	.4284	.8368
8	.8928	.7963	.8504	.4121	.5188
9	.8825	.6962	.7798	.3378	.6501
10	.9684	.	.7547	.	.
11	.8297	.8528	.7359	.5241	.8269
12A	.1830	.1971	.1698	.3441	.1954
12B	.3612	.3338	.2995	.2805	.3819
13	.3156	.3144	.2779	.3785	.3327
14	.4060	.5003	.3727	.2224	.4402
15	.3913	.2917	.3157	.1910	.3653
16	.2430	.2193	.1148	.1156	.2450
17	.2386	.3374	.3056	.1656	.3786
18	.5357	.4408	.3113	.3627	.3972
19	.2894	.3291	.2903	.3145	.2981
20	.3238	.3523	.2935	.3209	.3244
21	.3516	.2856	.2521	.4375	.2702
22	.5085	.4468	.3010	.3815	.4281
23	.3646	.2616	.3144	.3261	.3624
24	.7523	.7680	.7219	.5788	.7357
Overall	.6317	.5544	.5362	.3729	.5585

Table A.9 INCOME TARGET IN THE BASE AND TARGET YEARS

	Indonesia	Malaysia	Philippines	Singapore	Thailand
GDP_{1980}	70,129.00	20,434.36	36,661.70	11,713.55	33,199.11
GDP_{1984}[a]	84,876.95	24,990.46	42,629.72	13,027.72	39,695.74

Note: Assumes an annual growth of 5 percent.
[a] Values at 1980 prices.

Table A.10 MARGINAL PROPENSITIES TO CONSUME

Sector	Indonesia	Malaysia	Philippines	Singapore	Thailand
1	.	.	.0001	.	.
2	.0110	.	.0016	.	.
3	.	.	.	.	.
4	.	.0004	.0002	.	.0001
5	.0048	.	.0015	.	.0024
6	.0003	.	.	.	.0006
7	.0602	.0287	.0329	.0180	.0523
8	.0009	.0132	.0015	.0060	.0058
9	.0197	.0227	.0603	.0094	.0443
10	.	.	.	.	.
11	.0006	.	.0003	.	.0005
12A	.1295	.0291	.0575	.0135	.0702
12B	.1022	.1426	.1561	.1239	.1035
13	.0263	.0252	.0350	.0780	.0475
14	.0098	.0219	.0147	.0442	.0263
15	.0083	.0178	.0096	.0124	.0180
16	.0071	.0205	.0199	.0366	.0073
17	.0008	.0023	.0035	.0026	.0027
18	.0005	.0037	.0009	.0140	.0017
19	.0021	.0053	.0046	.0152	.0022
20	.0046	.0183	.0053	.0253	.0055
21	.0176	.0129	.0254	.0046	.0213
22	.0038	.0066	.0067	.0300	.0066
23	.0035	.0032	.0006	.0001	.0054
24	.3016	.4590	.3429	.3015	.4107
Overall	.7267	.8384	.8079	.7350	.8425

Table A.11 SECTORAL ICORS OF ASEAN COUNTRIES

Sector	Indonesia	Malaysia	Philippines	Singapore	Thailand
1	1.55	1.04	1.55	--	1.55
2	1.55	1.04	1.55	--	1.55
3	1.55	1.04	1.55	1.55	1.55
4	1.55	1.04	1.55	--	1.55
5	1.55	1.04	1.55	1.55	1.55
6	1.55	1.04	1.55	1.55	1.55
7	1.55	1.04	1.55	1.55	1.55
8	1.55	1.04	1.55	1.55	1.55
9	1.55	1.04	1.55	1.55	1.55
10	4.00	3.32	5.40	--	--
11	4.00	3.32	5.40	4.00	5.40
12A	2.55	1.64	1.80	1.87	1.80
12B	2.55	1.64	1.80	1.87	1.80
13	26.12	3.72	0.90	0.97	0.90
14	4.30	2.20	2.50	1.07	2.50
15	4.20	2.30	3.30	1.12	3.30
16	3.50	2.65	2.80	2.68	2.80
17	1.63	1.21	1.80	2.54	1.80
18	7.12	3.13	2.00	1.84	2.00
19	3.38	1.83	2.50	1.62	2.50
20	2.85	1.87	2.50	0.97	2.50
21	1.47	2.28	3.30	1.23	3.30
22	10.00	7.61	6.54	7.61	6.54
23	4.00	3.35	4.12	3.35	4.12
24	2.00	2.02	4.26	2.02	4.26

Table A.12 ASEAN PARTIAL SECTORAL ICORS: INVESTMENT EQUATION SUB-MATRIX

Investment Sector	1	2	3	4	5	6	7	8	9
Indonesia									
14	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-
20	.04	.04	.04	.04	.04	.04	.04	.04	.04
21	.04	.04	.04	.04	.04	.04	.04	.04	.04
23	.20	.20	.20	.20	.20	.20	.20	.20	.20
24	.02	.02	.02	.02	.02	.02	.02	.02	.02
Malaysia									
14	.01	.01	.01	.01	.01	.01	.01	.01	.01
19	.01	.01	.01	.01	.01	.01	.01	.01	.01
20	.07	.07	.07	.07	.07	.07	.07	.07	.07
21	.02	.02	.02	.02	.02	.02	.02	.02	.02
23	.08	.08	.08	.08	.08	.08	.08	.08	.08
24	.01	.01	.01	.01	.01	.01	.01	.01	.01
Philippines									
14	-	-	-	-	-	-	-	-	-
19	.01	.01	.01	.01	.01	.01	.01	.01	.01
20	.07	.07	.07	.07	.07	.07	.07	.07	.07
21	.01	.01	.01	.01	.01	.01	.01	.01	.01
23	.15	.15	.15	.15	.15	.15	.15	.15	.15
24	.06	.06	.06	.06	.06	.06	.06	.06	.06
Singapore									
14	-	-	.02	-	.02	.02	.02	.02	.02
19	-	-	-	-	-	-	-	-	-
20	-	-	.11	-	.11	.11	.11	.11	.11
21	-	-	.05	-	.05	.05	.05	.05	.05
23	-	-	.10	-	.10	.10	.10	.10	.10
24	-	-	.02	.02	.02	.02	.02	.02	.02
Thailand									
14	-	-	-	-	-	-	-	-	-
19	.01	.01	.01	.01	.01	.01	.01	.01	.01
20	.05	.05	.05	.05	.05	.05	.05	.05	.05
21	.04	.04	.04	.04	.04	.04	.04	.04	.04
23	.18	.18	.18	.18	.18	.18	.18	.18	.18
24	.03	.03	.03	.03	.03	.03	.03	.03	.03

Table A.12 (continued)

Investment Sector	10	11	12a	12	13	14	15	16	17
Indonesia									
14	-	-	-	-	.05	.01	.01	.01	-
19	-	.01	.01	.01	.07	.01	.01	.01	-
20	.01	.10	.06	.01	.63	.10	.10	.08	.04
21	.10	.10	.06	.06	.67	.11	.11	.09	.04
23	.52	.52	.33	.33	3.42	.56	.55	.46	.21
24	.06	.06	.04	.04	.38	.06	.06	.05	.02
Malaysia									
14	.04	.04	.02	.02	.04	.03	.03	.03	.01
19	.04	.04	.02	.02	.04	.03	.03	.03	.01
20	.23	.23	.11	.11	.25	.15	.16	.18	.08
21	.08	.08	.04	.04	.09	.05	.05	.06	.03
23	.25	.25	.12	.12	.28	.16	.17	.20	.09
24	.04	.04	.02	.02	.04	.02	.03	.03	.01
Philippines									
14	.01	.01	-	-	-	.01	.01	.01	-
19	.02	.02	.01	.01	-	.01	.01	.01	.01
20	.25	.25	.08	.08	.04	.12	.15	.12	.08
21	.05	.05	.02	.02	.01	.02	.03	.03	.02
23	.52	.52	.17	.17	.09	.24	.32	.27	.17
24	.20	.20	.07	.07	.03	.09	.12	.11	.07
Singapore									
14	-	.05	.03	.03	.01	.01	.02	.04	.03
19	-	-	-	-	-	-	-	-	-
20	-	.27	.13	.13	.07	.07	.01	.18	.17
21	-	.14	.07	.07	.03	.04	.04	.09	.09
23	-	.26	.12	.12	.06	.07	.07	.17	.17
24	-	.05	.02	.02	.01	.01	.01	.03	.03
Thailand									
14	-	.02	.02	.01	-	.01	.01	.01	.01
19	-	.02	.01	.01	-	.01	.02	.02	.01
20	-	.17	.06	.06	.03	.08	.11	.09	.06
21	-	.13	.04	.04	.02	.06	.08	.07	.04
23	-	.62	.21	.21	.10	.29	.38	.32	.21
24	-	.11	.04	.04	.02	.05	.06	.06	.04

Table A.12 (continued)

Investment Sector	18	19	20	21	22	23	24
Indonesia							
14	.01	.01	.01	-	-	-	-
19	.02	.01	.01	-	.03	.01	.01
20	.17	.08	.07	.04	.24	.10	.05
21	.18	.09	.07	.04	.25	.10	.05
23	.93	.44	.37	.19	1.31	.52	.26
24	.10	.05	.04	.02	.15	.06	.03
Malaysia							
14	.04	.02	.02	.03	.09	.04	.02
19	.04	.02	.02	.03	.09	.04	.02
20	.21	.12	.13	.15	.52	.23	.14
21	.07	.04	.04	.05	.18	.08	.05
23	.23	.14	.14	.17	.56	.25	.15
24	.04	.02	.02	.03	.09	.04	.02
Philippines							
14	.01	.01	.01	.01	.02	.01	.01
19	.01	.01	.01	.01	.03	.02	.02
20	.01	.12	.12	.15	.30	.19	.20
21	.02	.02	.02	.03	.06	.04	.04
23	.19	.24	.24	.32	.63	.40	.41
24	.08	.09	.09	.12	.25	.16	.16
Singapore							
14	.03	.02	.01	.02	.10	.05	.03
19	-	-	-	-	-	-	-
20	.13	.11	.07	.08	.52	.23	.14
21	.06	.06	.03	.04	.27	.12	.07
23	.12	.11	.06	.08	.50	.22	.13
24	.02	.02	.01	.02	.01	.04	.03
Thailand							
14	.01	.01	.01	.01	.01	.01	.01
19	.01	.01	.01	.02	.04	.02	.02
20	.06	.08	.08	.11	.21	.13	.14
21	.05	.06	.06	.08	.15	.10	.10
23	.23	.29	.29	.38	.76	.48	.49
24	.04	.05	.05	.06	.13	.08	.08

Table A.13 TOTAL OUTPUT: 1975(I-O TABLE), 1980(ESTIMATED), 1984(PROJECTED AT 1980 PRICES)

	INDONESIA			MALAYSIA		
Sector	1975	1980	1984	1975	1980	1984
	- - - - - - - - - in million US$ - - - - - - - - - - -					
1	3287.9	6119.6	7082.3	188.6	347.5	429.2
2	551.6	1026.7	1188.2	11.6	21.4	26.4
3	216.7	402.0	465.3	419.4	772.7	954.4
4	88.9	165.5	191.5	23.4	43.1	53.2
5	522.0	1027.4	1189.0	383.1	705.8	871.8
6	26.7	49.7	57.0	0.5	0.9	1.1
7	2378.0	4426.1	5122.4	223.4	411.6	508.4
8	435.7	811.0	938.5	111.5	205.4	253.7
9	1849.4	3442.2	3983.7	621.7	1145.4	1414.7
10	5938.8	15075.6	17922.9	329.6	3008.9	3500.0
11	471.0	1195.6	1421.4	339.5	625.5	855.4
12A	4244.8	5785.8	6758.1	259.6	575.5	874.9
12B	4264.3	5812.2	6789.1	1556.4	4337.2	6593.7
13	1457.0	2567.7	3420.2	370.4	1299.3	2537.9
14	948.7	2390.3	3838.4	739.4	1570.7	2333.0
15	508.2	1152.8	1751.3	239.8	419.4	603.8
16	854.6	1936.1	2939.2	373.2	927.5	1500.0
17	504.1	1142.1	1733.7	869.1	1490.4	1974.1
18	313.8	339.4	1653.3	175.8	390.1	605.0
19	568.8	1108.7	1554.6	998.9	1875.7	2608.1
20	380.0	962.2	1690.0	519.3	1823.0	3564.4
21	1735.9	3932.8	5970.2	154.5	247.2	315.7
22	396.9	844.8	1189.5	146.2	363.8	544.9
23	4787.4	13560.4	20371.3	661.1	2017.5	3298.8
24	15144.5	32681.8	46082.3	4869.8	9794.9	13669.7
	51876.7	118882.6	155133.0	14656.3	33530.1	46639.5

Table A.13 (continued)

Sector	PHILIPPINES			SINGAPORE		
	1975	1980	1984	1975	1980	1984
	in million US$					
1	737.5	1362.4	1192.9	--	--	--
2	35.8	66.1	82.2	--	--	--
3	10.2	18.8	23.4	.3	.4	.5
4	411.8	760.7	945.3	--	--	--
5	472.2	872.3	1083.9	11.5	16.4	18.7
6	72.6	134.1	166.7	3.0	4.3	4.9
7	1029.6	1902.0	2363.4	11.0	15.7	17.9
8	137.8	254.6	316.3	16.6	23.7	27.0
9	2344.3	4330.7	5381.3	324.4	462.3	528.0
10	1.9	6.5	9.5	--	--	--
11	559.8	1914.5	2807.0	12.9	13.7	14.5
12A	992.7	1904.7	2365.0	44.3	98.0	146.5
12B	4284.9	8221.3	10207.9	1078.4	2385.4	2569.4
13	1079.9	2963.2	4173.6	545.7	1926.8	3697.9
14	1097.1	2726.5	3706.7	885.4	2841.0	5179.6
15	565.0	1336.4	1785.4	355.9	940.8	1544.8
16	1206.8	3682.6	6219.7	2018.8	5818.8	10001.3
17	132.6	267.2	337.4	324.5	715.4	1066.6
18	287.7	839.4	1208.5	198.5	438.2	655.7
19	703.7	1245.2	1503.7	351.6	1092.0	1556.9
20	365.7	1299.8	2011.2	1209.7	5372.3	11699.0
21	573.8	2194.3	3488.7	539.8	981.0	1324.8
22	292.2	684.2	958.0	182.3	422.0	672.4
23	1812.7	5082.6	7892.4	848.3	1203.2	1294.7
24	10266.3	25609.8	31034.1	4752.6	9122.7	12661.4
	29474.6	68263.4	87193.6	13715.4	26523.9	36555.5

Table A.13 (continued)

Sector	THAILAND 1975	1980	1984
	- - in million US$ - -		
1	1502.0	2564.2	2891.6
2	163.2	568.5	763.7
3	80.7	434.6	655.8
4	246.6	686.9	872.2
5	51.4	77.6	85.1
6	85.7	188.8	226.2
7	1332.9	2502.9	2886.6
8	275.5	681.0	839.1
9	1648.1	3237.8	3774.7
10	--	--	--
11	309.2	849.5	1309.6
12A	1816.7	2234.8	2469.8
12B	3036.8	3735.8	4128.4
13	1756.9	3856.9	5685.9
14	1125.3	1378.3	1520.2
15	488.3	1216.6	1912.9
16	827.5	2874.5	5371.8
17	295.7	392.0	449.3
18	279.4	1044.6	2028.7
19	730.4	915.0	1020.3
20	448.1	704.1	877.6
21	775.6	2048.6	3320.1
22	373.9	711.4	1152.2
23	2053.5	5332.9	9150.0
24	10850.0	20817.6	28102.4
	30553.2	54813.6	73638.6

Table A.14 INCREASE IN PRODUCTION CAPACITY OVER THE PLANNING PERIOD - BY SECTORS
(in million US$ at 1980 Prices)

SECTOR	INDONESIA	MALAYSIA	PHILIPPINES	SINGAPORE	THAILAND
1	962.7	81.7	330.5	---	337.4
2	161.5	0.5	16.1	---	195.2
3	63.3	181.7	4.6	0.1	221.2
4	26.0	10.1	184.6	---	185.3
5	161.6	166.0	211.6	2.3	7.5
6	7.8	0.2	32.6	0.6	37.4
7	696.3	96.8	461.4	2.2	383.7
8	127.5	48.3	61.7	3.3	158.1
9	541.5	269.3	1050.6	65.7	536.9
10	2847.3	491.1	3.0	---	---
11	225.8	229.9	892.5	0.8	460.1
12A	972.3	299.4	460.3	48.5	235.0
12B	976.8	2256.5	1986.6	184.0	392.6
13	852.5	1238.6	1210.4	1771.1	1829.0
14	1448.1	762.5	980.2	2338.6	141.9
15	598.5	184.4	449.0	604.0	696.3
16	1003.1	572.5	2537.1	4182.5	2497.3
17	591.6	483.7	70.2	351.2	57.3
18	713.9	214.9	369.1	217.5	984.1
19	446.4	732.4	258.5	864.9	105.3
20	727.8	1741.4	711.4	6296.7	173.5
21	2037.4	68.5	1294.4	343.8	1271.5

Table A.15 OBJECTIVE FUNCTION: EXTENDED SINGLE-COUNTRY MODELS

	INDONESIA			MALAYSIA		
SECTOR	$k^{1}_{hh'}$	$k^{1e}_{hh'} + t[k^{1} + k^{1e}]$	$k^{1m}_{hh'}$	$k^{2}_{hh'}$	$k^{2e}_{hh'} + t[k^{2}_{hh'} + k^{2e}_{hh'}]$	$k^{2m}_{hh'}$
1	1.55	0.49	0.40	1.04	0.46	0.40
2	1.55	0.49	0.40	1.04	0.46	0.40
3	1.55	0.45	0.40	1.04	0.46	0.40
4	1.55	0.49	0.40	1.04	0.46	0.40
5	1.55	0.48	0.40	1.04	0.46	0.40
6	1.55	0.48	0.40	1.04	0.46	0.40
7	1.55	0.49	0.40	1.04	0.46	0.40
8	1.55	0.49	0.40	1.04	0.46	0.40
9	1.55	0.49	0.40	1.04	0.46	0.40
10	4.00	0.56	0.40	3.32	0.54	0.40
11	4.00	0.43	0.40	3.32	0.43	0.40
12A	2.55	0.59	0.40	1.64	0.53	0.40
12B	2.55	0.59	0.40	1.64	0.53	0.40
13	26.12	4.38	0.40	3.72	1.02	0.40
14	4.30	0.73	0.40	2.20	0.58	0.40
15	4.20	0.83	0.40	2.30	0.65	0.40
16	3.50	0.62	0.40	2.65	0.57	0.40
17	1.63	0.52	0.40	1.21	0.49	0.40
18	7.12	0.95	0.40	3.13	0.66	0.40
19	3.38	0.49	0.40	1.83	0.46	0.40
20	2.85	0.69	0.40	1.87	2.28	0.40
21	1.47	0.54	0.40	2.28	0.61	0.40
22	10.00	--	--	7.61	--	--
23	4.00	--	--	3.35	--	--
24	2.00	--	--	2.00	--	--

Table A.15 (continued)

	PHILIPPINES			SINGAPORE		
SECTOR	$k^{3}_{hh'}$	$k^{3e}_{hh'} + t[k^{3}_{hh'} + k^{e}_{hh'}]$	$k^{3m}_{hh'}$	$k^{4}_{hh'}$	$k^{4e}_{hh'} + t[k^{4}_{hh'} + k^{4e}_{hh'}]$	$k^{4m}_{hh'}$
1	1.55	0.49	0.40	--	--	0.40
2	1.55	0.49	0.40	--	--	0.40
3	1.55	0.45	0.40	1.55	0.45	0.40
4	1.55	0.49	0.40	--	--	0.40
5	1.55	0.48	0.40	1.55	0.48	0.40
6	1.55	0.49	0.40	1.55	0.49	0.40
7	1.55	0.49	0.40	1.55	0.49	0.40
8	1.55	0.49	0.40	1.55	0.49	0.40
9	1.55	0.49	0.40	1.55	0.49	0.40
10	5.40	0.61	0.40	--	--	0.40
11	5.40	0.61	0.40	4.00	0.43	0.40
12A	1.80	0.54	0.40	1.87	0.55	0.40
12B	1.80	0.54	0.40	1.87	0.55	0.40
13	0.90	0.60	0.40	0.97	0.61	0.40
14	2.50	0.60	0.40	1.07	0.50	0.40
15	3.30	0.75	0.40	1.12	0.54	0.40
16	2.80	0.58	0.40	2.68	0.58	0.40
17	1.80	0.53	0.40	2.54	0.57	0.40
18	2.00	0.58	0.40	1.84	0.56	0.40
19	2.50	0.47	0.40	1.62	0.45	0.40
20	2.50	0.66	0.40	0.97	0.52	0.40
21	3.30	0.68	0.40	1.23	0.53	0.40
22	6.54	--	--	7.61	--	--
23	4.12	--	--	3.35	--	--
24	4.20	--	--	2.00	--	--

Table A.15 (continued)

	THAILAND		
SECTOR	$\overset{5}{k}_{hh'}\ \overset{5\,e}{k}_{hh'} + t[\ \overset{5}{k}_{hh'} + \overset{5\,e}{k}_{hh'}\ ]$		$\overset{5\,m}{k}_{hh'}$
1	1.55	0.49	0.40
2	1.55	0.49	0.40
3	1.55	0.45	0.40
4	1.55	0.49	0.40
5	1.55	0.48	0.40
6	1.55	0.49	0.40
7	1.55	0.49	0.40
8	1.55	0.49	0.40
9	1.55	0.49	0.40
10	--	--	0.40
11	5.40	0.44	0.40
12A	1.80	0.54	0.40
12B	1.80	0.54	0.40
13	0.90	0.60	0.40
14	2.50	0.60	0.40
15	3.30	0.75	0.40
16	2.80	0.58	0.40
17	1.80	0.53	0.40
18	2.00	0.58	0.40
19	2.50	0.47	0.40
20	2.50	0.66	0.40
21	3.30	0.68	0.40
22	6.54	--	--
23	4.12	--	--
24	4.20	--	--

Table A.16 ASEAN TARIFFS RATE (Weighted by Country Imports)

SEC	INDONESIA	MALAYSIA	PHILIPPINES	SINGAPORE	THAILAND	18 MAJOR INDUSTRIAL COUNTRIES
1	0	0	0	0	0	4.4
2	0	0	0	0	0	4.4
3	9.2	0	0	0	19.1	2.6
4	59.9	0	0	0	19.1	4.4
5	14.5	0	7.0	0	11.7	4.0
6	1.0	0	7.0	0	11.7	4.4
7	32.0	0	4.4	0	45.8	4.4
8	12.3	2.0	5.0	0	16.6	4.4
9	19.1	3.6	25.7	0.1	12.9	4.4
10	0.1	2.0	0	0	0	3.7
11	27.1	0.3	16.0	0	4.0	0.7
12A	- 51.6	2.1	0	0	0	6.4
12B	24.2	15.2	50.5	15.8	34.2	6.4
13	24.0	13.2	42.6	3.0	30.2	15.0
14	21.5	4.8	34.4	0	31.4	7.0
15	- 20.2	9.6	40.5	0.4	26.9	9.4
16	4.1	40.7	21.0	6.5	22.8	5.7
17	71.6	11.9	9.3	0	49.5	5.8
18	74.3	9.6	30.8	0	23.1	7.3
19	14.8	7.2	34.4	0	13.7	2.5
20	13.1	12.3	42.8	0.1	20.9	8.0
21	22.8	20.7	36.0	2.3	14.6	7.7

Tabfle A.17 PARAMETRIC REDUCTION OF COST COEFFICIENT FOR MUTUAL TRADE VARIABLES IN THE OBJECTIVE FUNCTION

SECTOR	^1h_t	^2h_t	^3h_t	^4h_t	^5h_t
1	-	-	-	-	-
2	-	-	-	-	-
3	0.020	-	-	-	0.041
4	0.129	-	-	-	0.041
5	0.031	-	0.015	-	0.025
6	0.002	-	0.015	-	0.025
7	-	-	0.009	-	0.098
8	0.026	0.003	0.011	-	0.036
9	0.041	0.006	0.055	-	0.028
10	-	0.008	-	-	-
11	0.125	0.001	0.096	-	0.024
12A	-	0.005	-	-	-
12B	0.076	0.035	0.121	0.039	0.082
13	0.641	0.057	0.064	0.005	0.045
14	0.105	0.013	0.107	-	0.097
15	-	0.028	1.580	0.001	0.105
16	0.017	0.132	0.071	0.021	0.078
17	0.160	0.019	0.118	-	0.119
18	0.574	0.036	0.080	-	0.060
19	0.060	0.017	0.107	-	0.042
20	0.045	0.030	0.133	-	0.065
21	0.047	0.060	0.140	0.004	0.057

APPPENDIX B: RESULTS

Table B.1 RESULTS OF SINGLE COUNTRY MODEL: INDONESIA

Sector	X^{1h}	Limit (Production)	X_o^{1h}	E_T^{1h}	M_T^{1h}	E_o^{1h}	M_o^{1h}	Shadow prices for production constraint
1	962.7	962.7	6119.6	2898.3	0	0	0	5.73
2	161.5	161.5	1026.7	0	136.0	0	0	6.83
3	63.3	63.3	402.0	0	0	0.2	0	6.29
4	26.0	26.0	165.5	55.0	0	0	0	4.64
5	161.6	161.6	1027.4	306.1	0	284.1	0	4.98
6	7.8	7.8	49.7	0	55.4	0.5	230.5	7.42
7	696.3	696.3	4426.1	0	1310.9	35.2	49.6	6.57
8	127.5	127.5	811.0	0	53.5	341.6	235.7	6.37
9	541.5	541.5	3442.2	0	795.4	1074.2	6.9	6.26
10	2847.3	2847.3	15075.6	13193.8	0	14462.3	37.0	3.55
11	225.8	225.8	1195.6	0	455.5	404.2	35.1	3.36
12A	0	972.3	5785.8	0	7248.9	46.1	603.0	(0.00135)
12B	976.8	976.8	5812.2	3864.9	0	1006.2	349.5	0.34
13	0	852.5	2567.7	0	1349.8	14.8	613.6	(21.98)
14	1448.1	1448.1	2390.3	0	939.8	69.2	341.0	0.24
15	0	598.5	1152.8	0	1809.3	53.4	1225.9	(0.07)
16	0	1003.1	1936.1	0	1334.8	998.1	6812.3	(0.53)
17	101.3	591.6	1142.1	456.1	0	822.1	129.6	0
18	0	713.9	939.4	0	1995.9	13.2	609.4	(1.54)
19	0	446.4	1108.2	0	5057.5	229.2	2687.3	(0.11)
20	727.8	727.8	962.2	0	6463.0	24.1	3998.4	0.68
21	2037.4	2037.4	3932.8	0	5450.8	23.0	1923.5	2.20
22	287.7	none	(844.8)					
23	25288.5	none	(13560.4)					
24	18930.5	none	(32681.8)					

Objective Function (Cost) : 181,393.13
Income : 70,129.00
GDP 1984 : 84,876.95
Trade Balance : -13,682.30

I 14 : 21.83
I 19 : 545.94
I 20 : 4301.52
I 21 : 6271.63
I 23 : 34046.39
I 24 : 2599.78

Table B.2 RESULTS OF SINGLE COUNTRY MODEL: MALAYSIA

Sector	X^{2h}	Limit (Production)	X_o^{2h}	E_T^{2h}	M_T^{2h}	E_o^{2h}	M_o^{2h}	Shadow prices for production constraint
1	81.7	81.7	347.5	72.3	0	0	4.2	0.52
2	0.5	0.5	21.4	2.2	0	0	0	0.22
3	181.7	181.7	722.7	325.0	0	0.3	2.3	1.12
4	10.1	10.1	43.1	4.6	0	0.1	0	0.39
5	166.0	166.0	705.8	147.1	0	4.2	17.9	1.09
6	0.2	0.2	0.9	0	116.7	3.0	111.7	2.31
7	96.8	96.8	411.6	0	446.4	37.7	472.1	2.19
8	48.3	48.3	205.4	0	139.9	101.4	124.5	1.96
9	269.3	269.3	1145.4	21.1	0	228.8	108.2	0.36
10	0	491.1	3008.9	0	490.3	0	1252.8	0.57
11	0	229.9	625.5	0	348.9	81.8	405.5	(0.82)
12A	0	229.9	575.5	0	423.7	73.9	169.4	(0.47)
12B	0	2256.5	4337.2	0	1416.0	2569.8	1222.4	(0.26)
13	0	1238.6	1299.3	0	454.1	388.1	414.4	(3.57)
14	0	762.5	1570.5	0	630.9	1415.2	694.1	0.73
15	0	184.4	419.4	0	863.0	235.4	1222.8	(1.77)
16	0	572.5	927.5	0	712.2	197.5	605.4	(2.58)
17	0	483.7	1490.4	894.7	0	3412.8	27.8	(0.78)
18	0	214.7	390.1	0	389.9	55.0	170.5	(2.21)
19	0	732.4	1875.7	141.2	0	2962.7	886.2	(2.00)
20	0	1741.4	1823.0	0	1341.7	1305.4	2727.8	(0.83)
21	0	68.5	247.2	0	1213.3	139.5	1073.5	(1.49)
22	0	none	363.8	0				
23	664.42	none	2017.5	0				
24	10056.14	none	9794.9					

Objective Function (Cost) : 15,685.08
Income : 20,434.36
GDP 1984 : 24,990.46
Trade Balance : -7,378.80

I 14 : 236.25
I 19 : 236.25
I 20 : 1620.50
I 21 : 797.46
I 23 : 1967.30
I 24 : 236.25

Table B.3 RESULTS OF SINGLE COUNTRY MODEL: PHILIPPINES

Sector	X^{3h}	Limit (Production)	X^{3h}_{o}	E^{3h}_{T}	M^{3h}_{T}	E^{3h}_{o}	M^{3h}_{o}	Shadow prices for production constraint
1	330.5	330.5	1362.4	46.8	0	0	0	5.97
2	16.1	16.1	66.1	0	15.3	0	0	6.83
3	4.6	4.6	18.8	25.1	0	0	0	5.47
4	184.6	184.6	760.7	21.3	0	0	0	5.29
5	211.6	211.6	872.3	21.3	333.7	618.8	0	7.34
6	32.6	32.6	134.1	2.7	0	60.7	48.4	6.05
7	461.4	461.4	1902.0	0	170.8	411.7	165.2	6.91
8	61.7	61.7	254.6	38.3	0	90.8	14.6	6.04
9	1050.6	1050.6	4330.7	0	431.4	754.0	8.4	6.35
10	3.0	3.0	6.5	0	1698.2	0	1230.4	2.38
11	892.5	892.5	1914.5	1517.2	0	1011.3	28.9	1.01
12A	460.3	460.3	1904.7	0	620.0	0	0	1.05
12B	1986.6	1986.6	8221.3	0	361.8	2778.4	408.6	1.79
13	1210.4	1210.4	2963.2	512.3	0	435.2	277.7	1.87
14	980.2	980.2	2726.5	0	520.4	383.5	167.2	1.71
15	449.0	449.0	1336.4	0	849.5	64.5	625.5	0.48
16	0	2537.1	3682.6	0	264.3	60.4	17.6	(1.25)
17	70.2	70.2	267.2	0	128.8	4.6	37.7	1.85
18	369.1	369.1	839.4	0	206.9	136.4	52.4	1.88
19	258.5	258.5	1445.2	0	2259.4	129.8	542.9	1.10
20	711.4	711.4	1299.8	0	3739.2	150.5	1227.4	1.08
21	1266.2	1294.4	2094.3	0	1038.6	12.7	637.8	intermediate activity
22	290.2	none	684.2					
23	6633.4	none	5082.6					
24	10728.9	none	25609.8					

Objective Function (Cost) : 100,501.44
Income : 36,661.70
GDP 1984 : 42,629.72
Trade Balance : -10,453.30

I 14 : 228.73
I 19 : 462.91
I 20 : 4690.61
I 21 : 1431.78
I 23 : 10168.88
I 24 : 3794.20

Table B.4 RESULTS OF SINGLE COUNTRY MODEL: SINGAPORE

Sector	X^{4h}	Limit (Production)	X_o^{4h}	E_T^{4h}	M_T^{4h}	E_o^{4h}	M_o^{4h}	Shadow prices for production constraint
1	(-)	(-)	(-)	0	0	0	0.3	0.51
2	(-)	(-)	(-)	0	0	0	0.1	0.51
3	0.1	0.1	0.4	0	0.4	0.5	0	0.57
4	(-)	(-)	0	0	0	0	0	0.51
5	0	2.3	16.4	0	17.8	1.3	20.4	(1.51)
6	0.6	0.6	4.3	0	78.0	6.9	36.4	0.22
7	2.2	2.2	15.7	0	1059.7	9.4	488.6	0.59
8	3.3	3.3	23.7	0	131.6	61.2	242.8	0.59
9	65.7	65.7	462.3	0	188.3	144.8	141.7	0.48
10	(-)	(-)	(-)	0	3676.3	0	6628.6	0.51
11	0	0.8	13.7	0	47.2	21.8	36.9	(1.50)
12A	0	48.5	98.0	0	128.4	4.7	172.9	(0.74)
12B	0	184.0	2385.4	0	754.2	727.0	1117.7	0
13	1771.1	1771.1	1926.8	1289.0	0	878.8	711.0	0.26
14	1406.29	2338.6	2841.0	0	19.5	1554.9	1363.6	int. activity
15	0	604.0	940.8	0	797.7	994.8	1451.1	(0.10)
16	0	4182.5	5818.8	3174.0	0	12113.0	1472.1	(3.45)
17	0	351.2	715.4	0	386.0	375.1	870.8	(0.10)
18	0	217.5	438.2	0	345.1	145.5	383.2	(0.07)
19	864.9	864.9	1092.0	0	1149.9	705.3	2275.1	0.02
20	6296.7	6296.7	5372.3	3522.4	0	4252.2	4343.4	0.11
21	343.8	343.8	981.0	0	506.4	664.9	991.3	1.31
22	123.5	none	422.0					
23	485.0	none	1203.2					
24	1185.8	none	9122.7					

Objective Function (Cost)	: 1,100.23	I 14 :	188.82
Income	: 11,713.55	I 20 :	1225.33
GDP 1984	: 13,027.72	I 21 :	875.11
Trade Balance	: -1,301.10	I 22 :	1368.58
		I 24 :	183.97

Table B.5 RESULTS OF SINGLE COUNTRY MODEL: THAILAND

Sector	X^{5h}	Limit (Production)	X_o^{5h}	E_T^{5h}	M_T^{5h}	E_o^{5h}	M_o^{5h}	Shadow prices for production constraint
1	327.4	327.4	2564.2	1069.8	0	16.4	0	5.44
2	195.2	195.2	568.5	528.7	0	0.1	0	5.63
3	221.2	221.2	434.6	885.3	0	1.2	0	5.99
4	185.3	185.3	686.9	508.7	0	0	0	5.01
5	7.5	7.5	77.6	0	32.6	2.3	0	6.92
6	37.4	37.4	188.8	10.9	0	101.4	233.6	5.06
7	383.7	383.7	2502.9	210.6	0	721.7	49.8	5.29
8	158.1	158.1	681.0	188.2	0	122.8	85.3	2.60
9	536.9	536.9	3237.8	252.1	0	396.4	12.4	2.32
10	(-)	(-)	(-)	0	1454.8	0	1745.7	0.48
11	460.1	460.1	849.5	0	878.0	130.9	62.0	1.68
12A	235.0	235.0	2234.8	0	1313.1	900.9	0	0.60
12B	392.6	392.6	3735.8	0	358.1	1813.5	242.5	2.14
13	1829.0	1829.0	3856.9	609.2	0	399.0	224.9	1.62
14	141.9	141.9	1378.3	0	1776.1	408.5	478.5	1.62
15	0	696.3	1216.6	0	9105.4	32.9	1266.1	(0.09)
16	0	2497.3	2874.5	0	973.0	113.9	985.6	(0.95)
17	57.3	57.3	392.0	0	3.2	372.8	45.4	2.07
18	984.1	984.1	1044.6	442.8	0	72.3	89.3	0.66
19	22.9	105.3	915.0	0	2403.5	405.7	1047.8	int.activity
20	173.5	173.5	704.1	0	3599.8	95.6	2009.2	0.53
21	0	1271.5	2048.6	0	4316.9	96.8	1086.7	(1.01)
22	296.8	none	711.4					
23	8423.4	none	5332.9					
24	10348.3	none	20817.6					

Objective Function (Cost) : 97,694.73
Income : 33,199.11
GDP 1984 : 39,695.74
Trade Balance :-21,508.20

I 14 : 222.93
I 19 : 441.63
I 20 : 2966.18
I 21 : 3311.52
I 23 : 11762.04
I 24 : 1772.76

TABLE B.6 PRODUCTION, EXTRA AND INTRA-ASEAN TRADE AT 100, 50, 30, 10 AND 0 PERCENT REDUCTION: INDONESIA

	0 percent Reduction					10 percent Reduction				
Sector	1 h X	1 h E T	1 h M T	1r h t T	r1 h t T	1 h X	1 h E T	1 h M T	1r h t T	r1 h t T
1	962.7	2898.9	0	0	0	962.7	2898.9	0	0	0
2	161.5	0	0	0	136.0	161.5	0	0	0	136.0
3	63.3	0	0	0	215.5	63.3	0	0	0	215.5
4	26.0	54.9	0	0	0	26.0	54.9	0	0	0
5	161.6	0	0	306.1	0	161.6	0	0	306.1	0
6	7.8	0	55.4	0	0	7.8	0	55.4	0	0
7	696.3	0	1310.7	0	0	696.3	0	1310.7	0	0
8	127.5	0	53.5	0	0	127.5	0	53.5	0	0
9	541.5	0	789.6	0	0	541.5	0	705.7	0	0
10	2847.3	5872.6	0	7319.6	0	2847.3	5872.6	0	7319.6	0
11	225.8	0	445.5	0	0	225.8	0	445.5	0	0
12A	0	0	7248.6	0	0	0	0	7248.6	0	0
12B	976.8	1694.7	0	2171.0	0	976.8	1694.7	0	2171.0	0
13	0	0	1359.1	0	0	0	0	1359.1	0	0
14	1448.1	0	925.8	0	0	1448.1	0	925.8	0	0
15	0	0	1820.7	0	0	0	0	1820.7	0	0
16	0	0	0	0	1134.5	0	0	0	0	1134.5
17	591.6	477.9	0	389.6	0	591.6	477.9	0	389.6	0
18	0	0	1977.6	0	0	0	0	1977.6	0	0
19	0	0	5024.8	0	0	0	0	5024.8	0	0
20	727.8	0	6446.0	0	0	727.8	0	6446.3	0	0
21	2037.4	0	5407.6	0	0	2037.4	0	5404.1	0	0
22	287.4	0	0	0	0	289.4	0	0	0	0
23	25034.8	0	0	0	0	25045.8	0	0	0	0
24	18897.4	0	0	0	0	18897.4	0	0	0	0
I 14	21.8					21.8				
I 19	542.8					542.8				
I 20	4294.3					4294.3				
I 21	6225.2					6225.2				
I 23	33790.0					33790.0				
I 24	2593.2					2593.2				

TABLE B.6--continued

	30 percent Reduction					50 percent Reduction				
Sector	X^{lh}	E^{lh}_{T}	M^{lh}_{T}	t^{lrh}_{T}	t^{rlh}_{T}	X^{lh}	E^{lh}_{T}	M^{lh}_{T}	t^{lrh}_{T}	t^{rlh}_{T}
1	962.7	2898.9	0	0	0	962.7	2898.9	0	0	0
2	161.5	0	0	0	136.0	161.5	0	0	0	136.0
3	63.3	0	0	0	215.5	63.3	0	0	0	215.5
4	26.9	54.9	0	0	0	26.0	54.9	0	0	0
5	161.6	0	0	306.1	0	161.6	0	0	306.1	0
6	7.8	0	55.4	0	0	7.8	0	55.4	0	0
7	696.3	0	1310.7	0	0	696.3	0	1310.7	0	0
8	127.5	0	53.5	0	0	127.5	0	53.5	0	0
9	541.5	0	726.7	0	62.9	541.5	0	789.6	0	84.0
10	2847.3	5872.6	0	7319.6	0	2847.3	5872.6	0	7319.6	0
11	225.8	0	445.5	0	0	225.8	0	445.5	0	0
12A	0	0	7248.6	0	0	0	0	7248.6	0	0
12B	976.8	1694.7	0	2171.0	0	976.8	1694.7	0	2171.0	0
13	0	0	1359.1	0	0	0	0	1359.1	0	0
14	1448.1	0	925.8	0	0	1448.1	0	925.8	0	0
15	0	0	1820.7	0	0	0	0	1820.7	0	0
16	0	0	0	0	1134.5	0	0	0	0	1134.5
17	591.6	477.9	0	389.6	0	591.6	477.9	0	389.6	0
18	0	0	1977.6	0	0	0	0	1977.6	0	0
19	0	0	5024.8	0	0	0	0	5024.8	0	0
20	728.8	0	6446.0	0	0	727.8	0	6446.3	0	0
21	2037.4	0	5404.1	0	0	2037.4	0	5404.1	0	0
22	287.4	0	0	0	0	287.9	0	0	0	0
23	25034.8	0	0	0	0	25045.8	0	0	0	0
24	18897.4	0	0	0	0	18897.4	0	0	0	0
I 14	21.8					21.8				
I 19	542.8					542.8				
I 20	4294.3					4294.3				
I 21	6222.6					6225.2				
I 23	33790.0					33790.0				
I 24	2593.2					2593.2				

TABLE B.6--continued

	100 percent Reduction				
Sector	$X^{1\,h}$	$E^{1\,h}_{T}$	$M^{1\,h}_{T}$	$t^{1r\,h}_{T}$	$t^{r1\,h}_{T}$
1	962.7	2898.9	0	0	0
2	161.5	0	0	0	136.0
3	63.3	0	0	0	215.5
4	26.0	54.9	0	0	0
5	161.6	0	0	306.1	0
6	7.8	0	55.4	0	0
7	696.3	0	1310.7	0	0
8	127.5	0	53.5	0	0
9	541.5	0	789.6	0	0
10	2847.3	5872.7	0	7319.6	0
11	225.8	0	203.7	0	241.9
12A	0	0	7248.6	0	0
12B	976.8	974.7	0	2891.0	0
13	0	0	1359.1	0	1359.1
14	1448.1	0	925.8	0	0
15	0	0	1820.7	0	0
16	0	0	0	0	1134.5
17	591.6	345.8	0	521.7	0
18	0	0	1977.6	0	0
19	0	0	5024.8	0	0
20	727.8	0	6446.0	0	0
21	2037.4	0	5340.8	0	0
22	287.9	0	0	0	0
23	25034.8	0	0	0	0
24	18897.4	0	0	0	0
I 14	21.8				
I 19	542.8				
I 20	4294.3				
I 21	6158.5				
I 23	33790.0				
I 24	2593.2				

TABLE B.7 PRODUCTION, EXTRA AND INTRA-ASEAN TRADE AT 100, 50, 30, 10 AND 0 PERCENT REDUCTION: MALAYSIA

	0 percent Reduction					10 percent Reduction				
Sector	2 h X	2 h E T	2 h M T	2r h t T	r2 h t T	2 h X	2 h E T	2 h M T	2r h t T	r2 h t T
1	81.7	72.3	0	0	0	81.7	72.3	0	0	0
2	0.5	2.2	0	0	0	0.5	2.2	0	0	0
3	181.7	325.0	0	0	0	181.7	325.0	0	0	0
4	10.1	4.6	0	0	0	10.1	4.6	0	0	0
5	166.0	71.4	0	75.7	0	166.0	71.4	0	75.7	0
6	0.2	0	103.1	0	13.6	0.2	0	103.1	0	13.6
7	96.8	0	235.9	0	210.6	96.8	0	235.9	0	210.6
8	48.3	0	45.0	0	94.9	48.3	0	45.0	0	94.9
9	269.3	21.1	0	0	0	269.3	21.1	0	0	0
10	0	0	0	0	490.3	0	0	0	0	490.3
11	0	0	0	0	348.8	0	0	0	0	348.8
12A	0	0	423.7	0	0	0	0	423.7	0	0
12B	0	0	0	0	1416.1	0	0	0	0	1416.1
13	0	0	454.1	0	0	0	0	454.1	0	0
14	0	0	630.0	0	0	0	0	630.0	0	0
15	0	0	862.9	0	0	0	0	862.9	0	0
16	0	0	712.3	0	0	0	0	712.3	0	0
17	0	894.7	0	0	0	0	894.7	0	0	0
18	0	0	289.3	0	99.3	0	0	289.3	0	99.3
19	0	0	0	142.4	0	0	0	0	142.4	0
20	0	0	1340.6	0	0	0	0	1340.6	0	0
21	0	0	1101.5	0	0	0	0	1101.5	0	0
22	0	0	0	0	0	0	0	0	0	0
23	658.7	0	0	0	0	658.7	0	0	0	0
24	10058.1	0	0	0	0	10058.1	0	0	0	0
I 14	236.1					236.1				
I 19	236.1					236.1				
I 20	1619.5					1619.5				
I 21	685.6					685.6				
I 23	1961.6					1961.6				
I 24	236.1					236.1				

TABLE B.7--continued

	30 percent Reduction					50 percent Reduction				
Sector	2 h X	2 h E T	2 h M T	2r h t T	r2 h t T	2 h X	2 h E T	2 h M T	2r h t T	r2 h t T
1	81.7	72.3	0	0	0	81.7	72.3	0	0	0
2	0.5	2.2	0	0	0	0.5	2.2	0	0	0
3	181.7	325.0	0	0	0	181.7	325.0	0	0	0
4	10.1	4.6	0	0	0	10.1	4.6	0	0	0
5	166.0	71.4	0	75.7	0	166.0	71.4	0	75.7	0
6	0.2	0	103.6	0	13.6	0.2	0	103.1	0	13.6
7	96.8	0	235.9	0	210.6	96.8	0	235.9	0	210.6
8	48.3	0	45.0	0	94.9	48.3	0	45.0	0	94.9
9	269.3	21.1	0	0	0	269.3	0	0	21.1	0
10	0	0	0	0	490.3	0	0	0	0	490.3
11	0	0	0	0	348.8	0	0	0	0	348.7
12A	0	0	423.7	0	0	0	0	423.7	0	0
12B	0	0	0	0	1416.1	0	0	0	0	1416.1
13	0	0	0	0	454.1	0	0	0	0	454.1
14	0	0	629.4	0	0	0	0	629.4	0	0
15	0	0	862.8	0	0	0	0	862.9	0	0
16	0	0	712.3	0	0	0	0	712.3	0	0
17	0	894.7	0	0	0	0	894.7	0	0	0
18	0	0	288.4	0	99.3	0	0	289.3	0	99.3
19	0	0	0	143.2	0	0	0	0	143.2	0
20	0	0	0	0	1399.9	0	0	0	0	1339.9
21	0	0	1026.4	0	0	0	0	1026.4	0	0
22	0	0	0	0	0	0	0	0	0	0
23	654.9	0	0	0	0	654.9	0	0	0	0
24	10058.1	0	0	0	0	10059.4	0	0	0	0
I 14	235.9					235.9				
I 19	235.9					235.9				
I 20	1618.8					1618.8				
I 21	610.6					610.6				
I 23	1961.6					1957.7				
I 24	235.9					235.9				

TABLE B.7--continued

	100 percent Reduction				
Sector	h_X^2	h_{ET}^2	h_{MT}^2	h_{tT}^{2r}	h_{tT}^{r2}
1	81.7	72.3	0	0	0
2	0.5	2.2	0	0	0
3	181.7	325.0	0	0	0
4	10.1	4.6	0	0	0
5	166.0	71.4	0	75.7	0
6	0.2	0	103.1	0	13.6
7	96.8	0	235.9	0	210.6
8	48.3	0	0	0	139.9
9	269.3	0	21.1	0	0
10	0	0	0	0	490.3
11	0	0	0	0	348.8
12A	0	0	423.7	0	0
12B	0	0	0	0	1416.1
13	0	0	0	0	454.1
14	0	0	629.4	0	0
15	0	0	862.9	0	0
16	0	0	0	0	712.3
17	0	894.7	0	0	0
18	0	0	0	0	387.2
19	0	0	0	143.7	0
20	0	0	0	0	1339.5
21	0	0	982.7	0	0
22	0	0	0	0	0
23	652.7	0	0	0	0
24	10060.1	0	0	0	0
I 14	235.9				
I 19	235.9				
I 20	1618.4				
I 21	566.8				
I 23	1955.6				
I 24	235.9				

TABLE B.8 PRODUCTION, EXTRA AND INTRA-ASEAN TRADE AT 100, 50, 30, 10 AND 0 PERCENT REDUCTION: PHILIPPINES

	0 percent Reduction					10 percent Reduction				
Sector	3 h X	3 h E T	3 h M T	3r h t T	r3 h t T	3 h X	3 h E T	3 h M T	3r h t T	r3 h t T
1	330.5	46.8	0	0	0	330.5	46.8	0	0	0
2	16.1	0	0	0	15.3	16.1	0	0	0	15.3
3	4.6	25.1	0	0	0	4.6	25.1	0	0	0
4	184.6	21.3	0	0	0	184.6	21.3	0	0	0
5	211.6	0	0	0	333.7	211.6	0	0	0	333.7
6	32.6	0	0	2.7	0	32.6	0	0	2.7	0
7	461.4	0	170.8	0	0	461.4	0	170.8	0	0
8	61.7	0	0	38.3	0	61.7	0	0	38.3	0
9	1050.6	0	431.4	0	0	1050.6	0	431.4	0	0
10	3.0	0	0	0	1698.2	3.0	0	0	0	1698.2
11	892.5	242.8	0	1274.5	0	892.5	242.8	0	1274.5	0
12A	460.3	0	620.0	0	0	460.3	0	620.0	0	0
12B	1986.6	0	381.9	0	0	1986.6	0	381.9	0	0
13	1210.4	512.3	0	0	0	1210.4	512.3	0	0	0
14	980.2	0	520.0	0	0	980.2	0	520.0	0	0
15	449.0	0	849.4	0	0	449.0	0	849.4	0	0
16	0	0	264.2	0	0	0	0	264.2	0	0
17	70.2	0	128.9	0	0	70.2	0	128.9	0	0
18	369.1	0	206.6	0	0	369.1	0	206.6	0	0
19	258.5	0	2259.0	0	0	258.5	0	2259.0	0	0
20	711.4	0	3739.1	0	0	711.4	0	3739.1	0	0
21	1270.1	0	950.5	0	0	1270.1	0	950.5	0	0
22	290.2	0	0	0	0	290.2	0	0	0	0
23	6629.7	0	0	0	0	6629.7	0	0	0	0
24	10729.1	0	0	0	0	10792.1	0	0	0	0
I 14	228.7					228.7				
I 19	462.9					462.9				
I 20	4690.5					4690.5				
I 21	1346.3					1346.3				
I 23	10165.2					10165.2				
I 24	3794.1					3794.1				

TABLE B.8--continued

Sector	30 percent Reduction					50 percent Reduction				
	X^{3h}	E^{3h}_{T}	M^{3h}_{T}	t^{3rh}_{T}	t^{r3h}_{T}	X^{3h}	E^{3h}_{T}	M^{3h}_{T}	t^{3rh}_{T}	t^{r3h}_{T}
1	330.5	46.8	0	0	0	330.5	46.8	0	0	0
2	16.1	0	0	0	15.3	16.1	0	0	0	15.3
3	4.6	25.1	0	0	0	4.6	25.1	0	0	0
4	184.6	21.3	0	0	0	184.6	21.3	0	0	0
5	211.6	0	0	0	333.7	211.6	0	0	0	333.7
6	32.6	0	0	2.7	0	32.6	0	0	2.7	0
7	461.4	0	170.8	0	0	461.4	0	170.8	0	0
8	61.7	0	0	38.3	0	61.7	0	0	38.3	0
9	1050.6	0	431.4	0	0	1050.6	0	431.4	0	0
10	3.0	0	0	0	1698.2	3.0	0	0	0	1698.2
11	892.5	242.8	0	1274.5	0	892.5	242.8	0	1274.5	0
12A	460.3	0	620.0	0	0	460.3	0	620.0	0	0
12B	1986.6	0	381.9	0	0	1986.6	0	381.9	0	0
13	1210.4	58.3	0	454.1	0	1210.4	58.3	0	454.1	0
14	980.2	0	520.0	0	0	980.2	0	520.0	0	0
15	449.0	0	849.4	0	0	449.0	0	849.4	0	0
16	0	0	264.2	0	0	0	0	264.2	0	0
17	70.2	0	128.9	0	0	70.2	0	128.9	0	0
18	369.1	0	206.6	0	0	369.1	0	206.6	0	0
19	258.5	0	2259.0	0	0	258.5	0	2259.0	0	0
20	711.4	0	3739.1	0	0	711.4	0	3739.1	0	0
21	1270.1	0	950.5	0	0	1270.1	0	950.5	0	0
22	290.2	0	0	0	0	290.2	0	0	0	0
23	6629.7	0	0	0	0	6629.7	0	0	0	0
24	10729.1	0	0	0	0	10729.1	0	0	0	0
I 14	228.7					228.7				
I 19	462.9					462.9				
I 20	4690.5					4690.5				
I 21	1346.3					1346.3				
I 23	10165.2					10165.2				
I 24	3794.1					3794.1				

TABLE B.8--continued

	100 percent Reduction				
Sector	3 h X	3 h E T	3 h M T	3r h t T	r3 h t T
1	330.5	46.7	0	0	0
2	16.1	0	0	0	15.3
3	4.6	25.1	0	0	0
4	184.6	21.3	0	0	0
5	211.6	0	0	0	333.7
6	32.6	0	0	2.7	0
7	461.4	0	170.8	0	0
8	61.7	0	0	38.3	0
9	1050.6	0	347.4	0	84.0
10	3.0	0	0	0	1698.2
11	892.5	242.8	0	1517.4	0
12A	460.3	0	620.0	0	0
12B	1986.6	0	381.9	0	0
13	1210.4	0	0	512.3	0
14	980.2	0	519.9	0	0
15	449.0	0	849.4	0	0
16	0	0	264.2	0	0
17	70.2	0	128.9	0	0
18	369.1	0	206.6	0	0
19	258.5	0	2258.8	0	0
20	711.4	0	3739.1	0	0
21	1271.7	0	914.4	0	0
22	290.2	0	0	0	0
23	6628.1	0	0	0	0
24	10792.2	0	0	0	0
I 14	228.7				
I 19	462.9				
I 20	4690.5				
I 21	1311.3				
I 23	10163.7				
I 24	3794.1				

TABLE B.9 PRODUCTION, EXTRA AND INTRA-ASEAN TRADE AT 100, 50, 30, 10 AND 0 PERCENT REDUCTION: SINGAPORE

	0 percent Reduction					10 percent Reduction				
Sector	4 h X	4 h E T	4 h M T	4r h t T	r4 h t T	4 h X	4 h E T	4 h M T	4r h t T	r4 h t T
1	(-)	0	0	0	0	0	0	0	0	0
2	(-)	0	0	0	0	0	0	0	0	0
3	0.1	0	0	0	0.4	0.1	0	0	0	0.4
4	(-)	0	0	0	0	0	0	0	0	0
5	2.3	0	0	0	15.5	2.3	0	0	0	15.5
6	0.6	0	78.0	0	0	0.6	0	78.0	0	0
7	2.2	0	1059.7	0	0	2.2	0	1059.7	0	0
8	3.3	0	0	0	131.6	3.3	0	0	0	131.6
9	65.7	0	0	0	189.3	65.7	0	0	0	189.3
10	(-)	0	0	0	3676.3	0	0	0	0	3676.3
11	0	0	0	0	47.0	0	0	0	0	47.0
12A	0	0	128.4	0	0	48.5	0	128.4	0	0
12B	0	0	0	0	754.9	184.0	0	0	0	754.9
13	1771.1	1228.9	0	0	0	1771.1	1228.9	0	0	0
14	1439.5	0	0	0	0	1439.5	0	0	0	0
15	0	0	802.8	0	0	0	0	802.8	0	0
16	0	2039.5	0	1134.5	0	0	2039.5	0	1134.5	0
17	0	0	0	0	389.6	0	0	0	0	389.6
18	0	0	0	0	343.9	0	0	0	0	343.9
19	846.0	0	1018.9	0	142.4	846.0	0	1018.9	0	124.4
20	6269.7	2188.5	0	1339.9	0	6269.7	3528.4	0	0	0
21	343.8	0	268.4	0	0	343.8	0	268.4	0	0
22	123.5	0	0	0	0	123.5	0	0	0	0
23	473.8	0	0	0	0	473.8	0	0	0	0
24	1187.9	0	0	0	0	1187.9	0	0	0	0
I 14	188.3					188.3				
I 20	1221.5					1221.5				
I 21	637.2					637.2				
I 23	1357.4					1357.4				
I 24	183.6					183.6				

TABLE B.9--continued

Sector	30 percent Reduction					50 percent Reduction				
	4 h X	4 h E T	4 h M T	4r h t T	r4 h t T	4 h X	4 h E T	4 h M T	4r h t T	r4 h t T
1	0	0	0	0	0	(-)	0	0	0	0
2	0	0	0	0	0	(-)	0	0	0	0
3	0.1	0	0	0	0.4	0.1	0	0	0	0.4
4	0	0	0	0	0	(-)	0	0	0	0
5	2.3	0	0	0	15.5	2.3	0	0	0	15.5
6	0.6	0	78.0	0	0	0.6	0	78.0	0	0
7	2.2	0	1059.7	0	0	2.2	0	1059.7	0	0
8	3.3	0	0	0	3.3	3.3	0	0	0	131.6
9	67.5	0	0	0	189.3	65.7	0	0	0	189.3
10	0	0	0	0	3676.3	(-)	0	0	0	3676.3
11	0	0	0	0	47.0	0	0	0	0	47.0
12A	0	0	128.4	0	0	0	0	128.4	0	0
12B	0	0	0	0	754.9	0	0	0	0	754.9
13	1771.1	1228.9	0	0	0	1771.1	1228.9	0	0	0
14	1439.5	0	0	0	0	1439.5	0	0	0	0
15	0	0	802.8	0	0	0	0	802.8	0	0
16	0	2039.5	0	1134.5	0	0	2039.5	0	1134.5	0
17	0	0	0	0	389.6	0	0	0	0	389.6
18	0	0	0	0	343.9	0	0	0	0	343.9
19	846.0	0	1018.9	0	124.4	846.0	0	1018.9	0	143.2
20	6269.7	2188.5	0	1339.5	0	6269.7	3528.4	0	0	0
21	343.8	0	268.4	0	0	343.8	0	268.4	0	0
22	123.5	0	0	0	0	123.5	0	0	0	0
23	473.8	0	0	0	0	473.8	0	0	0	0
24	1187.9	0	0	0	0	1187.9	0	0	0	0
I 14	188.3					188.3				
I 20	1221.5					1221.5				
I 21	637.2					637.2				
I 23	1357.4					1357.4				
I 24	183.6					183.6				

TABLE B.9--continued

	100 percent Reduction				
	4 h	4 h	4 h	4r h	r4 h
	X	E	M	t	t
Sector		T	T	T	T
1	0	0	0	0	0
2	0	0	0	0	0
3	0.1	0	0	0	0.4
4	0	0	0	0	0
5	2.3	0	0	0	15.5
6	0.6	0	78.0	0	0
7	2.2	0	1059.7	0	0
8	3.3	0	45.0	0	86.6
9	65.7	0	0	0	189.3
10	0	0	0	0	3676.3
11	0	0	0	0	47.0
12A	48.5	0	128.4	0	0
12B	184.0	0	0	0	754.9
13	1771.1	597.3	0	691.6	0
14	1439.5	0	0	0	0
15	0	0	802.8	0	0
16	0	42.7	0	3081.3	0
17	0	0	0	0	389.6
18	0	0	287.4	0	56.6
19	845.3	0	1018.1	0	143.7
20	6269.7	0	0	3528.3	0
21	343.8	0	282.2	0	0
22	123.5	0	0	0	0
23	474.5	0	0	0	0
24	1187.9	0	0	0	0
I 14	188.3				
I 20	1221.5				
I 21	651.1				
I 23	1358.1				
I 24	183.6				

TABLE B.10 PRODUCTION, EXTRA AND INTRA-ASEAN TRADE AT 100, 50, 30, 10 AND 0 PERCENT REDUCTION: THAILAND

	0 percent Reduction					10 percent Reduction				
Sector	5 h X	5 h E T	5 h M T	5r h t T	r5 h t T	5 h X	5 h E T	5 h M T	5r h t T	r 5h t T
1	327.4	1069.8	0	0	0	327.4	1069.8	0	0	0
2	195.3	377.4	0	151.3	0	195.3	377.4	0	151.3	0
3	221.2	669.4	0	215.9	0	221.2	669.4	0	215.9	0
4	185.3	508.7	0	0	0	185.3	508.7	0	0	0
5	7.5	0	0	0	32.6	7.5	0	0	0	32.6
6	37.4	0	0	10.9	0	37.4	0	0	10.9	0
7	383.7	0	0	210.6	0	383.7	0	0	210.6	0
8	158.1	0	0	188.2	0	158.1	0	0	188.2	0
9	536.9	62.9	0	189.3	0	536.9	62.9	0	189.3	-
10	(-)	0	0	0	1454.8	0	0	0	0	1454.8
11	460.1	0	0	0	878.8	460.1	0	0	0	878.8
12A	235.0	0	1313.1	0	0	235.0	0	1313.1	0	0
12B	392.6	0	358.1	0	0	392.6	0	358.1	0	0
13	1829.0	609.2	0	0	0	1829.0	609.2	0	0	0
14	141.9	0	1775.9	0	0	141.9	0	1775.9	0	0
15	0	0	9104.8	0	0	0	0	9104.8	0	0
16	0	0	970.6	0	0	0	0	970.6	0	0
17	57.3	0	3.2	0	0	57.3	0	3.2	0	0
18	984.1	0	0	443.8	0	984.1	0	0	443.8	0
19	29.3	0	2398.7	0	0	29.3	0	2398.7	0	0
20	173.5	0	3599.3	0	0	173.5	0	3599.3	0	0
21	0	0	4217.9	0	0	0	0	4217.9	0	0
22	296.9	0	0	0	0	296.9	0	0	0	0
23	8418.6	0	0	0	0	8418.6	0	0	0	0
24	10348.9	0	0	0	0	10348.9	0	0	0	0
I 14	222.9					222.9				
I 19	441.6					441.6				
I 20	2966.1					2966.1				
I 21	3212.5					3212.5				
I 23	11757.3					11757.3				
I 24	1772.7					1772.7				

TABLE B.10--continued

	30 percent Reduction					50 percent Reduction				
Sector	X^{5h}	E_T^{5h}	M_T^{5h}	t_T^{5rh}	t_T^{r5h}	X^{5h}	E_T^{5h}	M_T^{5h}	t_T^{5rh}	t_T^{r5h}
1	327.4	1069.8	0	0	0	327.4	1069.8	0	0	0
2	195.3	377.4	0	151.3	0	195.3	377.4	0	151.3	0
3	221.2	669.4	0	215.9	0	221.2	669.4	0	215.9	0
4	185.3	508.7	0	0	0	185.3	508.7	0	0	0
5	7.5	0	0	0	32.6	7.5	0	0	0	32.6
6	37.4	0	0	10.9	0	37.4	0	0	10.9	0
7	383.7	0	0	210.6	0	383.7	0	0	210.6	0
8	158.1	0	0	188.2	0	158.1	0	0	188.2	0
9	536.9	0	0	252.1	0	536.9	62.9	0	189.3	0
10	0	0	0	0	1454.8	(-)	0	0	0	1454.8
11	460.1	0	0	0	878.8	460.1	0	0	0	878.8
12A	235.0	0	1313.1	0	0	235.0	0	1313.1	0	0
12B	392.6	0	358.1	0	0	392.6	0	358.1	0	0
13	1829.0	609.2	0	0	0	1829.0	609.2	0	0	0
14	141.9	0	1775.9	0	0	141.9	0	1775.9	0	0
15	0	0	9104.8	0	0	0	0	9104.8	0	0
16	0	0	970.6	0	0	0	0	970.6	0	0
17	57.3	0	3.2	0	0	57.3	0	3.2	0	0
18	984.1	0	0	443.8	0	984.1	0	0	443.8	0
19	29.3	0	2398.7	0	0	29.3	0	2398.7	0	0
20	173.5	0	3599.3	0	0	173.5	0	3599.3	0	0
21	0	0	4217.9	0	0	0	0	4217.9	0	0
22	296.9	0	0	0	0	296.9	0	0	0	0
23	8418.6	0	0	0	0	8418.6	0	0	0	0
24	10348.9	0	0	0	0	10348.0	0	0	0	0
I 14	222.9					222.9				
I 19	441.6					441.6				
I 20	2966.1					2966.1				
I 21	3212.5					3212.5				
I 23	11757.3					11757.3				
I 24	1772.7					1772.7				

TABLE B.10--continued

	100 percent Reduction				
Sector	5 h X	5 h E T	5 h M T	5r h t T	r 5h t T
1	327.4	1069.8	0	0	0
2	195.3	377.4	0	151.3	0
3	221.2	669.4	0	215.9	0
4	185.3	508.7	0	0	0
5	7.5	0	0	0	32.6
6	37.4	0	0	10.9	0
7	383.7	0	0	210.6	0
8	158.1	0	0	188.2	0
9	536.9	62.9	0	189.3	-
10	0	0	0	0	1454.8
11	460.1	0	0	0	879.8
12A	235.0	0	1313.1	0	0
12B	392.6	0	358.1	0	0
13	1829.0	609.2	0	0	0
14	141.9	0	1775.9	0	0
15	0	0	9103.9	0	0
16	0	0	0	0	970.3
17	57.3	0	0	0	3.3
18	984.1	0	0	443.8	0
19	38.4	0	2391.7	0	0
20	173.5	0	1410.2	0	2188.8
21	0	0	4070.7	0	0
22	297.1	0	0	0	0
23	8411.7	0	0	0	0
24	10347.5	0	0	0	0
I 14	222.9				
I 19	441.6				
I 20	2965.1				
I 21	3065.3				
I 23	11750.4				
I 24	1772.6				

Table B.11 RESULTS: FTA SITUATION INTEGRATION MODEL ON PRODUCTION, TRADE AND INVESTMENT FOR INDONESIA

	PRODUCTION			EXTRA-ASEAN TRADE				INTRA-ASEAN TRADE			
Sector	1 h X	Production limit	1 h X o	1 h E T	1 h M T	1 h E o	1 h M o	1r h t T export	r1 h t T import	1r h t o export	r1 h t o import
1	962.7	962.7	6119.6	2898.9	0	0	0	0	0	0	0
2	161.5	161.5	1026.7	0	0	0	0	0	136.0	0	0
3	63.3	63.3	402.0	0	0	0	0	0	215.5	0.2	0
4	26.0	26.0	165.5	54.9	0	0	0	0	0	0	0
5	161.1	161.1	1027.4	0	0	275.7	0	306.1	0	8.4	0
6	7.8	7.8	49.7	0	55.4	0.5	185.1	0	0	0	45.4
7	696.3	696.3	4426.1	0	1310.7	20.9	49.6	0	0	14.3	0
8	127.5	127.5	811.0	0	53.5	322.6	270.7	0	0	19.0	5.0
9	541.5	541.5	3442.2	0	789.6	1061.4	3.3	0	0	12.8	3.6
10	2847.3	2847.3	15075.6	5872.7	0	13460.8	7.0	7319.6	0	1001.5	0
11	225.8	225.8	1195.6	0	203.7	403.9	34.5	0	241.9	0.3	0.6
12A	0	972.3	5785.8	0	7248.6	34.0	503.3	0	0	12.1	99.7
12B	976.8	976.8	5812.2	974.7	0	985.6	221.9	2891.0	0	20.6	127.6
13	0	852.5	2567.7	0	0	13.3	349.6	0	1359.1	1.5	264.0
14	1448.1	1448.1	2390.3	0	925.8	66.6	142.4	0	0	2.6	198.6
15	0	598.5	1152.8	0	1820.7	47.5	1062.7	0	0	5.9	163.2
16	0	1003.1	1936.1	0	0	948.7	457.9	0	1134.5	69.4	6354.4
17	591.6	591.6	1142.1	345.8	0	462.3	63.2	521.7	0	359.8	66.4
18	0	713.9	939.4	0	1977.6	12.9	188.8	0	0	0.3	450.6
19	0	446.4	1108.2	0	5024.8	222.5	1604.4	0	0	6.7	1082.9
20	727.8	727.8	962.2	0	6446.0	7.5	2808.5	0	0	16.6	1189.9
21	2037.4	2037.4	3932.8	0	5340.8	19.7	1617.6	0	0	3.3	305.9
22	287.4	none	844.8	0	0	0	0	0	0	0	0
23	25034.8	none	13560.4	0	0	0	0	0	0	0	0
24	18897.4	none	32681.8	0	0	0	0	0	0	0	0
				10146.9	31197.2	18366.4	9530.5	11038.4	3087.0	1535.3	1334.3

Table B.12 EXTERNAL TRADE—FTA SITUATION: INDONESIA

	Extra - ASEAN		Intra - ASEAN Exports to				Intra - ASEAN Imports from			
Sector	Export	Import	Malaysia	Philippines	Singapore	Thailand	Malaysia	Philippines	Singapore	Thailand
1	2898.9	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	136.0
3	0	0	0	0	0	0	0	0	0	215.5
4	55.0	0	0	0	0	0	0	0	0	0
5	0	0	0	306.6	0	0	0	0	0	0
6	0	55.4	0	0	0	0	0	0	0	0
7	0	1310.7	0	0	0	0	0	0	0	0
8	0	53.5	0	0	0	0	0	0	0	0
9	0	789.6	0	0	0	0	0	0	0	0
10	5872.7	0	490.3	1698.2	3676.3	1454.8	0	0	0	0
11	0	203.7	0	0	0	0	0	241.9	0	0
12A	0	7248.6	0	0	0	0	0	0	0	0
12B	974.7	0	1416.1	361.9	754.9	358.1	0	0	0	0
13	0	0	0	0	0	0	0	512.3	237.5	609.2
14	0	925.8	0	0	0	0	0	0	0	0
15	0	1820.7	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	1134.5	0
17	345.8	0	0	128.9	389.6	3.3	0	0	0	0
18	0	1977.6	0	0	0	0	0	0	0	0
19	0	5024.8	0	0	0	0	0	0	0	0
20	0	6446.0	0	0	0	0	0	0	0	0
21	0	5340.8	0	0	0	0	0	0	0	0
	10146.9	31197.2	1906.4	2495.1	4820.9	1816.1	0	754.2	1372.0	960.7

Table B.13 RESULTS: FTA SITUATION INTEGRATION MODEL ON PRODUCTION, TRADE AND INVESTMENT FOR MALAYSIA

	PRODUCTION			EXTRA-ASEAN TRADE				INTRA-ASEAN TRADE			
Sector	2 h X	Production limit	2 h X o	2 h E T	2 h M T	2 h E o	2 h M o	2r h t T export	r2 h t T import	2r h t o export	r2 h t o import
1	81.7	81.7	347.5	72.3	0	0	1.1	0	0	0	3.1
2	0.5	0.5	21.4	2.2	0	0	0	0	0	0	0
3	181.7	181.7	722.7	325.0	0	0.3	1.4	0	0	0	0.9
4	10.1	10.1	43.1	4.6	0	0	0	0	0	0.1	0
5	166.0	166.0	705.8	71.4	0	4.0	13.9	75.7	0	0.2	4.0
6	0.2	0.2	0.9	0	103.1	2.5	110.5	0	13.6	0.5	1.2
7	96.8	96.8	411.6	0	235.9	2.1	374.4	0	210.6	35.6	97.7
8	48.3	48.3	205.4	0	0	66.0	93.5	0	139.9	35.4	31.0
9	269.3	269.3	1145.4	0	0	182.4	51.1	21.1	0	46.4	57.1
10	No activity	491.1	3008.9	0	0	0	1252.8	0	490.3	0	0
11	0	229.9	625.5	0	0	71.8	396.6	0	348.7	10.1	8.9
12A	0	299.4	575.5	0	423.7	73.9	150.0	0	0	0	19.5
12B	0	2256.5	4337.2	0	0	2241.1	1000.1	0	1416.1	328.7	222.3
13	0	1238.6	1299.3	0	0	339.1	405.2	0	454.1	49.0	9.2
14	0	762.5	1570.5	0	629.1	1318.5	612.3	0	0	96.7	81.8
15	0	184.4	419.4	0	862.8	189.9	1137.3	0	0	45.5	85.5
16	0	572.5	927.5	0	0	160.6	249.8	0	712.3	36.9	355.6
17	0	483.7	1490.4	894.7	0	311.6	26.1	0	0	296.8	1.7
18	0	214.9	390.1	0	0	34.1	117.8	0	387.2	20.9	52.7
19	0	732.4	1857.7	0	0	2881.9	830.6	143.7	0	80.8	55.6
20	0	1741.4	1823.0	0	0	1154.2	2529.4	0	1339.5	151.2	198.4
21	0	68.5	247.2	0	982.7	121.9	1068.9	0	0	17.6	4.6
22	0	none	363.8	0	0	0	0	0	0	0	0
23	652.7	none	2017.5	0	0	0	0	0	0	0	0
24	10060.1	none	9794.9	0	0	0	0	0	0	0	0
				1370.2	3237.3	11960.3	10422.8	240.5	5512.2	1252.3	1290.7

Table B.14 EXTERNAL TRADE--FTA SITUATION: MALAYSIA

	Extra - ASEAN		Intra - ASEAN Exports to				Intra - ASEAN Imports from			
Sector	Export	Import	Indonesia	Philippines	Singapore	Thailand	Indonesia	Philippines	Singapore	Thailand
1	72.3	0	0	0	0	0	0	0	0	0
2	2.2	0	0	0	0	0	0	0	0	0
3	325.0	0	0	0	0	0	0	0	0	0
4	4.6	0	0	0	0	0	0	0	0	0
5	71.4	0	0	27.6	15.5	32.6	0	0	0	0
6	0	103.1	0	0	0	0	0	2.7	0	10.9
7	0	235.9	0	0	0	0	0	0	0	210. 6
8	0	0	0	0	0	0	0	0	0	139.9
9	0	0	0	21.1	0	0	0	0	0	0
10	0	0	0	0	0	0	490.3	0	0	0
11	0	0	0	0	0	0	0	348.7	0	0
12A	0	423.7	0	0	0	0	0	0	0	0
12B	0	0	0	0	0	0	1416.1	0	0	0
13	0	0	0	0	0	0	0	0	454.1	0
14	0	629.1	0	0	0	0	0	0	0	0
15	0	862.8	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	712.3	0
17	894.7	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	387.2
19	0	0	0	0	143.7	0	0	0	0	0
20	0	0	0	0	0	0	0	0	1339.5	0
21	0	982.7	0	0	0	0	0	0	0	0
	1370.2	3237.3	0	48.7	159.2	32.6	1906.4	351.4	2505.8	748.6

TAble B.15 RESULTS: FTA SITUATION INTEGRATION MODEL ON PRODUCTION, TRADE AND INVESTMENT FOR PHILIPPINES

	PRODUCTION			EXTRA-ASEAN TRADE				INTRA-ASEAN TRADE			
Sector	X^{3h}	Production limit	X_{o}^{3h}	E_{T}^{3h}	M_{T}^{3h}	E_{o}^{3h}	M_{o}^{3h}	t_{T}^{3rh} export	t_{T}^{r3h} import	t_{o}^{3rh} export	t_{o}^{r3h} import
1	330.5	330.5	1362.4	46.8	0	0	0	0	0	0	0
2	16.1	16.1	66.1	0	0	0	0	0	15.3	0	0
3	4.6	4.6	18.8	25.1	0	0	0	0	0	0	0
4	184.6	184.6	760.7	21.3	0	0	0	0	0	0	0
5	211.6	211.6	872.3	0	0	618.8	0	0	333.7	0	0
6	32.6	32.6	134.1	0	0	60.7	47.5	2.7	0	0	1.0
7	461.4	461.4	1902.0	0	170.8	411.0	159.4	0	0	2.2	0
8	61.7	61.7	254.6	0	0	88.6	14.6	38.3	84.0	1.4	0
9	1050.6	1050.6	4230.7	0	347.4	752.6	8.4	1.4	0	46.4	57.1
10	3.0	3.0	6.5	0	0	0	1135.9	0	1698.2	0	94.5
11	892.5	892.5	1914.5	0	0	1010.9	28.0	1517.4	0	0.4	0.9
12A	460.3	460.3	1904.7	0	620.0	0	0	0	0	0	0
12B	1986.6	1986.6	8221.3	0	0	2773.2	378.8	0	361.9	5.2	29.8
13	1210.4	1210.4	2963.2	0	0	418.3	276.2	512.3	0	16.9	1.5
14	980.2	980.2	2726.5	0	519.9	380.2	165.9	0	0	3.3	1.3
15	449.0	449.0	1336.4	0	849.4	51.2	621.1	0	0	13.3	4.3
16	0	2537.1	3682.6	0	0	40.4	14.2	0	264.2	20.0	3.4
17	70.2	70.2	267.2	0	0	3.4	37.1	0	128.9	1.2	0.6
18	369.1	369.1	839.4	0	206.5	110.9	51.5	0	0	25.5	0.9
19	258.5	258.5	1245.2	0	2258.8	114.6	538.7	0	0	15.2	4.2
20	711.4	711.4	1299.8	0	3739.1	138.2	1222.8	0	0	12.3	4.6
21	1271.7	1294.4	2194.3	0	914.4	8.2	636.9	0	0	4.5	0.9
22	290.2	none	684.2	0	0	0	0	0	0	0	0
23	6628.1	none	5082.6	0	0	0	0	0	0	0	0
24	10729.2	none	25609.8	0	0	0	0	0	0	0	0
				93.2	9626.2	0	0	2495.1	2886.2	0	0

Table B.16 EXTERNAL TRADE--FTA SITUATION: PHILIPPINES

	Extra - ASEAN		Intra - ASEAN Exports to				Intra - ASEAN Imports from			
Sector	Export	Import	Indonesia	Malaysia	Singapore	Thailand	Indonesia	Malaysia	Singapore	Thailand
1	46.8	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	15.3
3	25.1	0	0	0	0	0	0	0	0	0
4	21.3	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	306.1	27.6	0	0
6	0	0	0	2.7	0	0	0	0	0	0
7	0	170.8	0	0	0	0	0	0	0	0
8	0	0	0	0	38.3	0	0	0	0	0
9	0	347.4	0	0	0	0	0	21.1	0	62.9
10	0	0	0	0	0	0	1698.2	0	0	0
11	0	0	241.9	348.7	47.0	879.8	0	0	0	0
12A	0	620.0	0	0	0	0	0	0	0	0
12B	0	0	0	0	0	0	361.9	0	0	0
13	0	0	512.3	0	0	0	0	0	0	0
14	0	519.9	0	0	0	0	0	0	0	0
15	0	849.4	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	264.2	0
17	0	0	0	0	0	0	128.9	0	0	0
18	0	206.5	0	0	0	0	0	0	0	0
19	0	2258.8	0	0	0	0	0	0	0	0
20	0	3739.1	0	0	0	0	0	0	0	0
22	0	914.4	0	0	0	0	0	0	0	0
	93.2	9626.2	754.2	351.4	85.2	879.8	2495.1	48.7	264.2	78.2

Table B.17 RESULTS: FTA SITUATION INTEGRATION MODEL ON PRODUCTION, TRADE AND INVESTMENT FOR SINGAPORE

	PRODUCTION			EXTRA-ASEAN TRADE				INTRA-ASEAN TRADE			
Sector	4 h X	Production limit	4 h X o	4 h E T	4 h M T	4 h E o	4 h M o	4r h t T export	r4 h t T import	4r h t o export	r4 h t o import
1	No activity	0	0	0	0	0	0	0	0	0	0.3
2	No activity	0	0	0	0	0	0	0	0	0	0.1
3	0.1	0.1	0.4	0	0	0	0	0	0.4	0.5	0
4	No activity	0	0	0	0	0	0	0	0	0	0
5	2.3	2.3	16.4	0	0	1.1	17.1	0	15.5	0.2	9.3
6	0.6	0.6	4.3	0	78.0	5.2	35.9	0	0	1.7	0.5
7	2.2	2.2	15.7	0	1059.7	3.9	365.4	0	0	5.5	122.7
8	3.3	3.3	23.7	0	45.0	44.7	202.3	0	86.6	16.6	39.7
9	65.7	65.7	462.3	0	0	122.5	79.1	0	189.3	22.3	62.6
10	No activity	0	0	0	0	0	5405.1	0	3676.3	0	1223.5
11	0	0.8	13.7	0	0	2.0	30.9	0	47.0	19.8	6.0
12A	0	48.5	98.0	0	128.4	4.6	76.6	0	0	0.1	96.3
12B	0	184.0	2385.4	0	0	642.2	780.7	0	754.9	84.8	337.0
13	1771.1	1771.1	1926.8	597.3	0	797.3	635.3	691.6	0	81.5	75.8
14	1439.6	2338.6	2841.0	0	0	1371.1	1278.2	0	0	183.8	85.4
15	0	604.0	940.8	0	802.8	710.9	1406.7	0	0	283.9	44.4
16	0	4182.5	5818.8	92.7	0	9785.7	1360.3	3081.3	0	2327.3	111.8
17	0	351.2	715.4	0	0	356.6	77.8	0	389.6	18.5	793.0
18	0	217.5	438.2	0	287.4	35.4	347.8	0	56.6	110.1	35.4
19	845.3	864.9	1092.0	0	1018.1	321.2	2212.1	0	143.7	384.1	63.0
20	6269.7	6296.7	5372.3	0	0	3592.4	4204.2	3528.3	0	659.8	139.2
21	343.8	343.8	981.0	0	282.2	353.0	975.1	0	0	311.9	16.2
22	123.5	none	422.0	0	0	0	0	0	0	0	0
23	474.5	none	1203.2	0	0	0	0	0	0	0	0
24	1187.9	none	9122.7	0	0	0	0	0	0	0	0
				690.0	3701.5	0	0	0	0	0	0

EXTERNAL TRADE--FTA SITUATION: SINGAPORE

	Extra - ASEAN		Intra - ASEAN Exports to				Intra - ASEAN Imports from			
Sector	Export	Import	Indonesia	Malaysia	Philippines	Thailand	Indonesia	Malaysia	Philippines	Thailand
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0.4
4	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	15.5	0	0
6	0	78.0	0	0	0	0	0	0	0	0
7	0	1059.7	0	0	0	0	0	0	0	0
8	0	45.0	0	0	0	0	0	0	38.3	48.3
9	0	0	0	0	0	0	0	0	0	189.3
10	0	0	0	0	0	0	3676.3	0	0	0
11	0	0	0	0	0	0	0	0	47.0	0
12A	0	128.4	0	0	0	0	0	0	0	0
12B	0	0	0	0	0	0	754.9	0	0	0
13	597.3	0	37.5	454.1	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0
15	0	802.8	0	0	0	0	0	0	0	0
16	92.7	0	1134.5	712.3	264.2	970.3	0	0	0	0
17	0	0	0	0	0	0	389.6	0	0	0
18	0	287.4	0	0	0	0	0	0	0	56.6
19	0	1018.1	0	0	0	0	0	143.7	0	0
20	0	0	0	1339.5	0	2188.8	0	0	0	0
21	0	282.2	0	0	0	0	0	0	0	0
	690.0	3701.5	1372.0	2505.8	264.2	3159.1	4820.9	159.2	85.2	294.6

Table B.19 RESULTS: FTA SITUATION INTEGRATION MODEL ON PRODUCTION, TRADE AND INVESTMENT FOR THAILAND

	PRODUCTION			EXTRA-ASEAN TRADE				INTRA-ASEAN TRADE			
Sector	5 h X	Production limit	5 h X o	5 h E T	5 h M T	5 h E o	5 h M o	5r h t T	r5 h t T	5r h t o	r5 h t o
								export	import	export	import
1	327.4	327.4	2564.2	1069.8	0	14.0	0	0	0	2.4	0
2	195.2	195.2	568.5	377.4	0	0	0	151.3	0	0.1	0
3	221.2	221.2	434.6	669.4	0	0	0	215.9	0	1.2	0
4	185.3	185.3	686.9	508.7	0	0	0	0	0	0	0
5	7.5	7.5	77.6	0	0	0.4	0	0	32.6	1.9	0
6	37.4	37.4	188.8	0	0	93.4	233.4	10.9	0	8.0	0.2
7	383.7	383.7	2502.9	0	0	571.7	44.8	210.6	0	160.0	5.0
8	158.1	158.13	681.0	0	0	104.5	83.3	188.2	0	183.3	2.0
9	536.9	536.9	3237.8	0	0	363.8	11.6	252.1	0	32.6	0.8
10	No activity	0	0	0	0	0	1745.7	0	1451.8	0	0
11	460.1	460.1	849.5	0	0	118.5	58.8	0	879.8	12.4	3.2
12A	235.0	235.0	2234.8	0	1313.1	756.9	0	0	0	144.0	7.5
12B	392.6	392.6	3735.8	0	0	1658.3	235.0	0	358.1	155.2	7.5
13	1829.0	1829.0	3856.9	0	0	377.0	217.3	0	0	22.6	7.6
14	141.9	141.9	1378.3	0	1775.5	387.0	454.7	0	0	21.5	23.8
15	0	696.3	1216.6	0	9103.9	24.1	1248.6	0	0	8.8	17.5
16	0	2497.3	2874.5	0	0	112.4	382.4	0	970.3	1.5	3.2
17	57.3	57.3	392.0	0	0	358.4	41.3	0	3.3	14.4	4.1
18	984.1	984.1	1044.6	0	0	33.5	85.0	443.8	0	38.8	4.3
19	38.4	105.3	915.0	0	2391.7	392.2	1017.8	0	0	13.5	30.0
20	173.5	173.5	704.1	0	1410.2	69.3	1960.9	0	2188.8	26.3	48.3
21	0	1271.5	2048.6	0	4070.7	91.3	992.4	0	0	1.5	94.3
22	297.1	none	711.4	0	0	0	0	0	0	0	0
23	8411.7	none	5332.9	0	0	0	0	0	0	0	0
24	10347.5	none	20817.6	0	0	0	0	0	0	0	0
				2625.2	20065.0	0	0	2082.1	5887.6	0	0

Table B.20 EXTERNAL TRADE--FTA SITUATION: THAILAND

	Extra - ASEAN		Intra - ASEAN Exports to				Intra - ASEAN Imports from			
Sector	Export	Import	Indonesia	Malaysia	Philippines	Singapore	Indonesia	Malaysia	Philippines	Singapore
1	1069.8	0	0	0	0	0	0	0	0	0
2	377.4	0	136.0	0	15.3	0	0	0	0	0
3	669.4	0	215.5	0	0	0.4	0	0	0	0
4	508.7	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	32.6	0	0
6	0	0	0	10.9	0	0	0	0	0	0
7	0	0	0	210.6	0	0	0	0	0	0
8	0	0	0	139.9	0	48.3	0	0	0	0
9	0	0	0	0	62.9	189.3	0	0	0	0
10	0	0	0	0	0	0	1454.8	0	0	0
11	0	0	0	0	0	0	0	0	879.8	0
12A	0	1313.1	0	0	0	0	0	0	0	0
12B	0	0	0	0	0	0	358.1	0	0	0
13	0	0	609.2	0	0	0	0	0	0	0
14	0	1775.5	0	0	0	0	0	0	0	0
15	0	9103.9	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	970.3
17	0	0	0	0	0	0	3.3	0	0	0
18	0	0	0	387.2	0	56.6	0	0	0	0
19	0	2391.7	0	0	0	0	0	0	0	0
20	0	1410.2	0	0	0	0	0	0	0	2188.8
21	0	4070.7	0	0	0	0	0	0	0	0
	2625.2	20065.0	960.7	748.6	78.2	294.6	1816.1	32.6	879.8	3159.1

Table B.21 INTRA-ASEAN TRADE AT 50 PERCENT TARIFF REDUCTION

	Intra-ASEAN Exports						Intra-ASEAN Imports					
Sector	IND	MAL	PHI	SIN	THA	TOTAL	IND	MAL	PHI	SIN	THA	TOTAL
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	151.3	151.3	136.0	0	15.3	0	0	151.3
3	0	0	0	0	215.9	215.9	215.5	0	0	0.4	0	215.9
4	0	0	0	0	0	0	0	0	0	0	0	0
5	306.1	75.7	0	0	0	381.8	0	0	333.7	15.5	32.6	381.8
6	0	0	2.7	0	10.9	13.6	0	13.6	0	0	0	13.6
7	0	0	0	0	210.6	210.6	0	210.6	0	0	0	210.6
8	0	0	38.3	0	188.2	226.5	0	94.9	0	31.6	0	226.5
9	0	21.1	0	0	251.1	273.2	84.0	0	0	89.3	0	273.2
10	7319.6	0	0	0	0	7319.6	0	490.3	1698.2	3676.3	1454.8	7319.6
11	0	0	1274.5	0	0	1274.5	0	348.8	0	47.0	878.8	1274.6
12A	0	0	0	0	0	0	0	0	0	0	0	0
12B	2171.0	0	0	0	0	2171.0	0	1416.1	0	754.9	0	2171.0
13	0	0	454.1	0	0	454.1	0	454.1	0	0	0	454.1
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	1134.5	0	1134.5	1134.5	0	0	0	0	1134.5
17	389.6	0	0	0	0	389.6	0	0	0	389.6	0	389.6
18	0	0	0	0	443.8	443.8	0	99.3	0	343.9	0	443.2
19	0	143.2	0	0	0	143.2	0	0	0	143.2	0	143.2
20	0	0	0	1339.9	0	1339.9	0	1339.9	0	0	0	1339.9
21	0	0	0	0	0	0	0	0	0	0	0	0
	10186.3	240.0	1769.4	2474.4	1472.3	16142.5	1570.0	4467.3	2047.3	5691.7	2366.2	16142.5

Table B.22 INTRA-ASEAN TRADE AT 30 PERCENT TARIFF REDUCTION

	Intra-ASEAN Exports						Intra-ASEAN Imports					
Sector	IND	MAL	PHI	SIN	THA	TOTAL	IND	MAL	PHI	SIN	THA	TOTAL
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	151.3	151.3	136.0	0	15.3	0	0	151.3
3	0	0	0	0	215.9	215.9	215.5	0	0	0.4	0	215.9
4	0	0	0	0	0	0	0	0	0	0	0	0
5	306.1	75.7	0	0	0	381.8	0	0	333.7	15.5	32.6	381.8
6	0	0	2.7	0	10.9	13.6	0	13.6	0	0	0	13.6
7	0	0	0	0	210.6	210.6	0	210.6	0	0	0	210.6
8	0	0	38.3	0	188.2	226.5	0	94.9	0	131.6	0	226.5
9	0	0	0	0	252.1	252.1	62.9	0	0	189.3	0	252.2
10	7319.6	0	0	0	0	7319.6	0	490.3	1698.2	3676.3	1454.8	7319.6
11	0	0	1274.5	0	0	1274.5	0	348.8	0	47.0	878.8	1274.6
12A	0	0	0	0	0	0	0	0	0	0	0	0
12B	2171.0	0	0	0	0	2171.0	0	1416.1	0	754.9	0	2171.0
13	0	0	454.1	0	0	454.1	0	454.1	0	0	0	454.1
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	1134.5	0	1134.5	1134.5	0	0	0	0	1134.5
17	389.6	0	0	0	0	389.6	0	0	0	389.6	0	389.6
18	0	0	0	0	443.8	443.8	0	99.3	0	343.9	0	443.8
19	0	143.2	0	0	0	143.2	0	0	0	143.2	0	143.2
20	0	0	0	1339.9	0	1339.9	0	1339.9	0	0	0	1339.9
21	0	0	0	0	0	0	0	0	0	0	0	0
	10186.3	218.9	1769.4	2474.4	1472.3	16121.4	1548.9	4467.3	2047.3	5691.7	2366.2	16121.4

Table B.23 INTRA-ASEAN TRADE AT 10 PERCENT REDUCTION

	Intra-ASEAN Exports						Intra-ASEAN Imports					
Sector	IND	MAL	PHI	SIN	THA	TOTAL	IND	MAL	PHI	SIN	THA	TOTAL
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	151.3	151.3	136.0	0	15.3	0	0	151.3
3	0	0	0	0	215.9	215.9	215.5	0	0	0.4	0	215.9
4	0	0	0	0	0	0	0	0	0	0	0	0
5	306.1	75.7	0	0	0	381.8	0	0	333.7	15.5	32.6	381.8
6	0	0	2.7	0	10.9	13.6	0	13.6	0	0	0	13.6
7	0	0	0	0	210.6	210.6	0	210.6	0	0	0	210.6
8	0	0	38.3	0	188.2	226.5	0	94.9	0	131.6	0	226.5
9	0	0	0	0	189.3	189.3	0	0	0	189.3	0	189.3
10	7319.6	0	0	0	0	7319.6	0	490.3	698.2	3676.3	1454.8	7319.6
11	0	0	1274.5	0	0	1274.5	0	348.8	0	47.0	878.8	1274.5
12A	0	0	0	0	0	0	0	0	0	0	0	0
12B	2771.0	0	0	0	0	2771.0	0	1416.1	0	754.9	0	1471.1
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	1134.5	0	1134.5	1134.5	0	0	0	0	1134.5
17	389.6	0	0	0	0	389.6	0	0	0	389.6	0	389.6
18	0	0	0	0	443.8	443.8	0	99.3	0	343.9	0	443.8
19	0	142.4	0	0	0	142.4	0	0	0	142.4	0	142.4
20	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0
	10186.3	218.9	1315.4	1134.5	1409.4	14264.6	1486.0	2673.4	2047.3	5691.7	2366.2	14264.6

Table B.24 INTRA-ASEAN TRADE AT 0 PERCENT REDUCTION

	Intra-ASEAN Exports						Intra-ASEAN Imports					
Sector	IND	MAL	PHI	SIN	THA	TOTAL	IND	MAL	PHI	SIN	THA	TOTAL
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	151.3	151.3	36.0	0	15.3	0	0	151.3
3	0	0	0	0	215.9	215.9	15.5	0	0	0.4	0	215.9
4	0	0	0	0	0	0	0	0	0	0	0	0
5	306.1	75.7	0	0	0	381.8	0	0	333.7	15.5	32.6	381.8
6	0	0	2.7	0	10.9	13.6	0	13.6	0	0	0	13.6
7	0	0	0	0	210.8	210.6	0	210.6	0	0	0	210.6
8	0	0	38.3	0	188.2	226.5	0	94.9	0	131.6	0	226.5
9	0	0	0	0	189.3	189.3	0	0	0	189.3	0	189.3
10	7319.6	0	0	0	0	7319.6	0	490.3	1698.2	3676.3	1454.8	7319.6
11	0	0	1274.5	0	0	1274.5	0	348.8	0	47.0	878.8	1274.5
12A	0	0	0	0	0	0	0	0	0	0	0	0
12B	2171.0	0	0	0	0	2171.0	0	416.1	0	754.9	0	2171.0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	1134.5	0	1134.5	1134.5	0	0	0	0	1134.5
17	389.6	0	0	0	0	389.6	0	0	0	389.6	0	389.6
18	0	0	0	0	443.8	443.8	0	99.3	0	343.9	0	443.8
19	0	142.4	0	0	0	142.4	0	0	0	142.4	0	142.4
20	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0
	10186.3	218.9	1315.4	1134.5	1409.4	14264.6	1486.0	22673.4	2047.3	5691.7	2366.2	14264.6

Table B.25 DIRECTION AND MAGNITUDE OF INTRA-ASEAN TRADE AT 100 PERCENT TARIFF REDUCTION

	r1 h t T	r2 h t T	r3 h t T	r4 h t T	r5 h t T		
1r h t T		1906.38	2004.32	4820.83	1454.80	10186.32	Indonesia's Intra-ASEAN Exports
2r h t T	0		27.60	158.68	32.62	218.90	Malaysia's Intra-ASEAN Exports
3r h t T	0	351.43		85.23	878.75	1315.41	Philippines' Intra-ASEAN Exports
4r h t T	1134.54	0	0		0	1134.54	Singapore's Intra-ASEAN Exports
5r h t T	351.46	415.62	15.34	627.00		1409.42	Thailand's Intra-ASEAN Exports
	1486.00	2673.42	2047.26	5691.74	2366.17	14264.59	Total Intra-ASEAN Trade
	Indonesia's Intra-ASEAN Imports	Malaysia's Intra-ASEAN Imports	Philippines' Intra-ASEAN Imports	Singapore's Intra-Asean Imports	Thailand's Intra-ASEAN Imports		

Table B.26 DIRECTION AND MAGNITUDE OF INTRA-ASEAN TRADE AT 50 PERCENT TARIFF REDUCTION

	r1 h t T	r2 h t T	r3 h t T	r4 h t T	r5 h t T		
1r h t T		1906.37	2004.32	4820.83	1454.80	10186.32	Indonesia's Intra-ASEAN Exports
2r h t T	21.09		27.60	158.68	32.62	239.99	Malaysia's Intra-ASEAN Exports
3r h t T	0	805.45		85.23	878.75	1709.43	Philippines' Intra-ASEAN Exports
4r h t T	1334.54	1339.88	0		0	2474.40	Singapore's Intra-ASEAN Exports
5r h t T	414.33	415.62	15.34	627.00		1472.29	Thailand's Intra-ASEAN Exports
	1569.96	4467.32	2047.26	5691.74	2366.17	16142.45	Total Intra-ASEAN Trade
	Indonesia's Intra-ASEAN Imports	Malaysia's Intra-ASEAN Imports	Philippines' Intra-ASEAN Imports	Singapore's Intra-Asean Imports	Thailand's Intra-ASEAN Imports		

Table B.27 DIRECTION AND MAGNITUDE OF INTRA-ASEAN TRADE AT 30 PERCENT TARIFF REDUCTION

	r1 h t T	r2 h t T	r3 h t T	r4 h t T	r5 h t T		
1r h t T		1906.37	2004.32	4820.83	1454.80	10186.32	Indonesia's Intra-ASEAN Exports
2r h t T	0		27.06	158.68	32.62	218.90	Malaysia's Intra-ASEAN Exports
3r h t T	0	805.45		85.23	878.75	1769.43	Philippines' Intra-ASEAN Exports
4r h t T	1334.54	1339.88	0		0	2474.42	Singapore's Intra-ASEAN Exports
5r h t T	414.33	415.62	15.34	627.00		1472.29	Thailand's Intra-ASEAN Exports
	1548.87	4467.32	2047.26	5691.74	2366.17	16121.36	Total Intra-ASEAN Trade
	Indonesia's Intra-ASEAN Imports	Malaysia's Intra-ASEAN Imports	Philippines' Intra-ASEAN Imports	Singapore's Intra-Asean Imports	Thailand's Intra-ASEAN Imports		

Table B.28 DIRECTION AND MAGNITUDE OF INTRA-ASEAN TRADE AT 10 PERCENT TARIFF REDUCTION

	r1 h t T	r2 h t T	r3 h t T	r4 h t T	r5 h t T		
1r h t T		1906.38	2004.32	4820.83	1454.80	10186.32	Indonesia's Intra-ASEAN Exports
2r h t T	0		27.60	158.68	32.62	218.90	Malaysia's Intra-ASEAN Exports
3r h t T	0	351.43		85.23	878.75	1315.41	Philippines' Intra-ASEAN Exports
4r h t T	1134.54	0	0		0	1134.54	Singapore's Intra-ASEAN Exports
5r h t T	351.46	415.62	15.34	627.00		1409.42	Thailand's Intra-ASEAN Exports
	1486.00	2673.42	2047.26	5691.74	2366.17	14264.59	Total Intra-ASEAN Trade
	Indonesia's Intra-ASEAN Imports	Malaysia's Intra-ASEAN Imports	Philippines' Intra-ASEAN Imports	Singapore's Intra-Asean Imports	Thailand's Intra-ASEAN Imports		

Table B.29 SIMPLEX MULTIPLIERS OF THE INTERNATIONAL TRADE VARIABLES: EXTENDED INTEGRATION MODEL--FREE TRADE AREA SITUATION: INDONESIA

Sector	Extra - ASEAN		Intra-ASEAN Exports to				Intra-ASEAN Imports from			
	Export	Import	MAL	PHI	SIN	THA	MAL	PHI	SIN	THA
1	basic	.92	.89	.69	1.43	.74	.65	.62	basic	.62
2	.62	.31	1.50	.62	.62	1.36	.03	.69	1.43	basic
3	.58	.31	1.48	1.26	.62	1.36	.05	.04	.81	basic
4	basic	.92	.89	.69	.00	.74	.65	.62	1.43	.62
5	.02	.89	.92	basic	.00	.00	.62	1.30	1.43	1.36
6	.92	basic	.61	1.30	.61	1.35	.92	.01	.82	.01
7	.92	basic	.61	.62	.61	1.35	.92	.69	.82	.01
8	.92	basic	.61	1.30	.61	1.36	.92	.004	.82	.004
9	.92	basic	1.53	.62	.62	1.36	.001	.69	.81	.001
10	basic	.99	basic	basic	basic	basic	1.53	1.30	1.43	1.36
11	.86	basic	.62	1.30	.62	.62	.92	basic	.81	.74
12A	1.02	basic	.61	.62	.61	.61	.92	.69	.82	.75
12B	basic	1.02	basic	basic	basic	basic	1.53	1.30	1.43	1.36
13	4.60	.22	.62	1.30	1.42	1.36	.92	basic	basic	basic
14	1.16	basic	.61	.62	.71	.61	.92	.69	.72	.75
15	1.26	basic	.61	.62	.61	.61	.92	.69	.82	.75
16	.84	.22	.62	.62	1.43	.62	.92	.69	basic	.74
17	basic	.95	.89	basic	basic	basic	.65	1.30	1.43	1.36
18	1.38	basic	.61	.62	.61	1.36	.92	.69	.82	.004
19	.92	basic	1.53	.62	.61	.61	.004	.69	.82	.75
20	1.12	basic	.61	.62	1.43	.61	.92	.69	.003	.75
21	.97	basic	.61	.62	.61	.61	.92	.69	.82	.75

Table B.30 SIMPLEX MULTIPLIERS OF THE INTERNATIONAL TRADE VARIABLES: EXTENDED INTEGRATION MODEL--FREE TRADE AREA SITUATION : PHILIPPINES

Sector	Extra - ASEAN		Intra-ASEAN Exports to				Intra-ASEAN Imports from			
	Export	Import	IND	PHI	SIN	THA	IND	PHI	SIN	THA
1	basic	.99	.62	.89	1.43	.74	.69	.72	.07	.69
2	.69	.31	.69	1.57	.69	1.43	.62	.03	.81	basic
3	basic	.95	.04	.91	.04	.78	1.20	.70	1.46	.65
4	basic	.99	.62	.89	.00	.74	.69	.72	1.50	.69
5	.71	.28	1.30	1.60	.69	.69	basic	basic	.81	.74
6	.31	.68	.006	basic	.002	.74	1.30	1.60	1.50	.69
7	.99	basic	.69	.68	.68	1.42	.62	.92	.82	.004
8	.31	.68	.004	.00	basic	.74	1.30	1.60	1.50	.69
9	.99	basic	.69	1.60	.69	1.43	.62	basic	.81	basic
10	.74	.38	1.30	.69	.69	.69	basic	.92	.81	.74
11	.43	.69	basic	basic	basic	basic	1.30	1.60	1.50	1.43
12A	1.04	basic	.69	.68	.68	.68	.62	.92	.82	.74
12B	.64	.41	1.30	.69	.69	.69	basic	.92	.81	.74
13	.20	.90	basic	.00	.81	.74	1.30	1.60	.69	.69
14	1.10	basic	.69	.68	.78	.68	.62	.92	.72	.74
15	1.25	basic	.69	.68	.68	.68	.62	.92	.82	.74
16	.87	.22	.69	.69	1.50	.69	.62	.92	basic	.74
17	.70	.34	1.30	1.57	.69	.69	basic	.03	.81	.74
18	1.08	basic	.69	.68	.69	1.43	.62	.92	.82	.002
19	.97	basic	.69	1.60	.69	.68	.62	.003	.82	.74
20	1.16	basic	.69	.68	1.50	.68	.62	.92	.001	.74
21	1.18	basic	.69	.68	.68	.68	.62	.92	.82	.74

Table B.31 SIMPLEX MULTIPLIERS OF THE INTERNATIONAL TRADE VARIABLES: EXTENDED INTEGRATION MODEL--FREE TRADE AREA SITUATION: SINGAPORE

Sector	Extra - ASEAN		Intra-ASEAN Exports to				Intra-ASEAN Imports from			
	Export	Import	IND	PHI	SIN	THA	IND	PHI	SIN	THA
1	basic	1.74	.00	.27	.07	.13	1.43	1.46	1.43	1.43
2	basic	.31	1.43	1.70	.81	1.56	.62	.03	.69	.00
3	.72	.31	.81	1.68	1.46	1.56	.62	.05	.04	.00
4	basic	.31	1.43	1.70	1.50	1.56	.00	.03	.00	.00
5	.75	.28	1.43	1.73	.81	.81	.00	basic	.69	.74
6	1.03	basic	.82	.81	1.50	1.55	.61	.92	.002	.002
7	1.03	basic	.81	.81	.82	1.55	.61	.92	.68	.002
8	1.03	basic	.81	.81	1.50	1.56	.61	.92	basic	basic
9	1.03	.003	.81	1.73	.81	1.56	.62	.00	.69	basic
10	basic	.38	1.43	.81	.81	.81	basic	.92	.69	.74
11	1.03	.004	.81	.81	1.50	.81	.62	.92	basic	.74
12A	1.03	basic	.82	.81	.82	.81	.61	.92	.68	.74
12B	.82	.41	1.43	.81	.81	.81	basic	.92	.69	.74
13	basic	1.03	basic	basic	.69	.74	1.43	1.73	.81	.81
14	.94	.09	.72	.72	.72	.72	.71	1.01	.78	.84
15	1.03	basic	.82	.81	.82	.81	.61	.92	.68	.74
16	basic	1.03	basic	basic	basic	basic	1.43	1.73	1.50	1.56
17	.69	.34	1.43	1.70	.81	.81	basic	.03	.69	.74
18	1.03	basic	.82	.81	.82	1.56	.61	.92	.69	basic
19	1.03	basic	.82	1.73	.82	.81	.61	basic	.69	.74
20	.22	.81	.003	basic	.001	basic	1.43	1.73	1.50	1.56
21	1.03	basic	.82	.81	.82	.81	.61	.92	.68	.74

Table B.32 SIMPLEX MULTIPLIERS OF THE INTERNATIONAL TRADE VARIABLES: EXTENDED INTEGRATION MODEL--FREE TRADE AREA SITUATION: THAILAND

Sector	Extra - ASEAN		Intra-ASEAN Exports to				Intra-ASEAN Imports from			
	Export	Import	IND	PHI	SIN	THA	IND	PHI	SIN	THA
1	basic	1.05	.62	.89	.69	1.43	.74	.77	.74	.13
2	basic	1.05	basic	.89	basic	.00	1.36	.77	1.43	1.56
3	basic	1.05	basic	.87	.65	basic	1.36	.79	.78	1.50
4	basic	1.05	.62	.89	.69	.00	.74	.77	.74	1.56
5	.77	.28	1.36	1.66	.74	.74	.00	basic	.69	.81
6	.31	.74	.01	basic	.69	.002	1.35	1.66	.74	1.55
7	.31	.74	.01	basic	.004	.002	1.35	1.66	1.42	1.55
8	.31	.74	.004	basic	.69	basic	1.36	1.66	.74	1.56
9	.31	.74	.001	.92	basic	basic	1.36	.74	1.43	1.56
10	.00	.38	1.36	.74	.74	.74	basic	.92	.69	.81
11	1.00	.003	.74	.74	1.43	.74	.62	.92	basic	.81
12A	1.10	basic	.75	.74	.74	.74	.61	.92	.68	.81
12B	.69	.41	1.36	.74	.74	.74	basic	.92	.69	.81
13	.20	.96	basic	.00	.69	.81	1.36	1.66	.74	.74
14	1.16	basic	.75	.74	.74	.84	.61	.92	.68	.72
15	1.31	basic	.75	.74	.74	.74	.61	.92	.68	.81
16	.92	.22	.74	.74	.74	1.56	.62	.92	.69	basic
17	.75	.34	1.36	1.63	.74	.74	basic	.03	.69	.81
18	.40	.74	.004	basic	.002	basic	1.36	1.66	1.43	1.56
19	1.03	basic	.75	1.65	.74	.74	.61	.001	.68	.81
20	1.22	basic	.75	.74	.74	1.56	.61	.92	.68	basic
21	1.24	basic	.75	.74	.74	.74	.61	.92	.68	.81

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BIOGRAPHICAL SKETCH

The third in a family of four, Eddie Chiew was born on May 8, 1947 in Bentong, a small township in central Peninsular Malaya. His early (elementary) education began in 1956 at the Sulaiman Primary School until Standard Five, at which time he moved to Kuala Lumpur, the capital city about forty miles to the west. After a year at Batu Road School (One), he attended High School, Kuala Lumpur where he completed the Cambridge "O" levels. He was also the school captain in 1965.

For a while, he studied at the Victoria Institution but left to enter the University of Agriculture Malaysia (then the College of Agriculture) when offered direct entry to the second year. He obtained his diploma in agriculture and immediately enrolled for a four-year undergraduate course at the University of Malaya. He graduated with second class (upper) honors in 1972. He was also voted the best all-round student in the Class of '72 by the University of Malaya Agricultural Graduates Alumni. He was a tutor in agricultural economics and graduated with a master of science degree in agricultural economics in 1976 from the University of Malaya. He took a position of lecturer at the University of Agriculture Malaysia and has remained there since.

He began coursework at the University of Florida for the Doctor of Philosophy in the winter semester of 1979. He returned to his faculty position at the University of Agriculture Malaysia in June, 1983, and returned to Gainesville in fall of 1987 to complete his Ph. D.

He has delivered papers at international and regional conferences in ASEAN economic cooperation, trade, food and agriculture policies, food security and farm management.

He is a member of Alpha Zeta. His main interest in sports is tennis and he has represented his country in Davis Cup competitions from 1975 to 1978.

He is married to Jessie and they have two children, Jaime and Eline.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Max R. Langham

Max R. Langham, Chairman
Professor of Food and Resource
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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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